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ABSTRACT

The purpose of this guide is to introduce the potential user to the Academic Science and Engineering Statistics Survey Database and to provide detailed information on the data structures and formats of the archival and public-use tapes derived from that database. The guide is divided into eight sections which deal with: (1) overview information; (2) nature of the Academic Science and Engineering database; (3) survey data tapes (noting that "archival" tapes are those generated for National Science Foundation's-NSF use while "public-use" tapes are versions specifically generated for distribution to data users outside NSF); (4) data and data tapes related to the Survey of Scientific and Engineering Expenditures at Universities and Colleges; (5) data and data tapes related to the Survey of Scientific and Engineering Personnel Employed at Colleges and Universities; (6) data and data tapes related to Survey of Graduate Science and Engineering Students and Postdoctorates; (7) data and data tapes related to applications for NSF traineeships; and (8) data and data tapes related to the Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions. Additional information (including various codes, sample survey questionnaire forms, references, and sample tape directory and tape dump) are included in the appendices. (JN)

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DATA USER GUIDE

TO THE

National Science Foundation's Academic Science and Engineering Statistics Survey Data Tapes

February 1986

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Division of Science Resources Studies
Universities and Nonprofit Institutions Studies Group

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DATA USER GUIDE

to the

NATIONAL SCIENCE FOUNDATION'S

ACADEMIC SCIENCE AND ENGINEERING STATISTICS

SURVEY DATA TAPES

Version 5

February 1986

National Science Foundation
Division of Science Resources Studies
Universities and Nonprofit Institutions Studies Group

Provided by

QUANTUM RESEARCH CORPORATION
5454 Wisconsin Avenue, Suite 1125
Chevy Chase, MD 20815

Under the terms of NSF contract SRS-84-20649

DATA TAPE ORDERING PROCEDURES

Public-use data tapes from the Academic Science & Engineering Statistics Survey Data Base are available for purchase; an order form listing the available tapes and the cost of each is provided at the end of this guide. Tapes listed on the order form are currently available and will normally be shipped within three working days after receipt of an order. Tapes containing data from the survey year now being processed, 1985-86, will not be available until fall 1986-87.

Each tape shipped has a description label and is accompanied by a directory which lists the names, FICE codes, and, if appropriate, UNISG codes of all institutions whose data are on the tape. A sample page of the tape directory for the Survey of Graduate Science and Engineering Students and Postdoctorates is provided in appendix K. This directory lists all institutions surveyed and indicates whether each institution was (Y = Yes) or was not (N = No) a participant in the course of each annual survey. A standard IBM IEBPTCH dump of the first 50 records also accompanies each tape. A sample tape dump is also provided in appendix K.

ADDITIONAL SERVICES

Besides the provision of public-use data tapes, several additional services are available through NSF to potential users of Academic Science and Engineering Statistics data:

- An institutional profile summarizing key data cells reported from all applicable surveys for the latest 6-year period (eight years for the Federal support survey and six for the graduate student survey) can be produced by NSF for any doctorate or master's institution or group of institutions in the data base. Summary profiles are available for all doctorate-granting institutions and for all historically black institutions.

- Special purpose statistical tables can, in most cases, be generated quite rapidly from the data base with the various report and table generation software systems that have been developed.

- Special purpose data tapes with selected data variables from one or several surveys can be produced to meet special needs.

Requests for such additional services should be made to Ms. Judy Coakley of the Universities and Nonprofit Institutions Studies Group, Division of Science Resources Studies, National Science Foundation at (202) 634-4673. Estimated costs and delivery dates for such services will be provided promptly.

PREFACE

The objective of this Data User Guide is to introduce the potential user to the Academic Science and Engineering Statistics Survey Data Base and to provide detailed information on the data structures and formats of the archival and public-use tapes derived from that data base. (See section 3 for a discussion of the difference between archival tapes and public-use tapes.) This Version 5 of the Data User Guide supersedes Version 4 of May 1982 and the addenda of February 1983, December 1983, and December 1984.

Since the Academic Science and Engineering Statistics Survey data base is subject to continuing development, changes will be made to this Data User Guide as additional data, improved data structures, or added services become available. If you wish to receive future updates as they are issued, please fill out the form at the end of this guide and return it to Ms. Esther Gist, Universities and Nonprofit Institutions Studies Group (UNISG), Division of Science Resources Studies, Room L-602, National Science Foundation, 1800 G Street, N.W., Washington, D.C. 20550.

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Section 1

OVERVIEW

The collection and analysis of data on academic science/engineering (S/E) resources is the responsibility of the Universities and Nonprofit Institutions Studies Group (UNISG) in the Division of Science Resources Studies (SRS). UNISG administers four major survey data systems:

- the NSF Survey of Scientific and Engineering Expenditures at Universities and Colleges (referred to as the "expenditures" survey);

- the NSF Survey of Scientific and Engineering Personnel Employed at Universities and Colleges (referred to as the "employment" survey);

- the NSF-NIH Survey of Graduate Science and Engineering Students and Postdoctorates (referred to as the "graduate student" survey); and

- the NSF Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions (referred to as the "Federal support" or "CASE" survey).

The first two surveys listed above are surveys of academic institutions; the respondent for a given institution is typically located in the central financial, research administration, or institutional studies office of that institution. In the graduate student survey and the applications for NSF traineeships which preceded it, the respondents are individual departments within academic institutions; the departmental responses are coordinated by one individual within each graduate or medical school. Data for the Federal support survey are submitted by some 15 Federal agencies which provide virtually all Federal obligations to academic institutions for R&D activities.

While survey forms and populations may change somewhat from year to year, some core data cells have remained essentially the same since 1972. The degree and type of change differs for each

survey. The Federal support survey, for example, has experienced almost no changes in the number and content of data cells collected over the past nine years, whereas in the employment survey entire items (some 260 data cells) have been dropped and a new approach to measuring research involvement was designed in January 1978. The employment survey population has remained relatively stable while the Federal support survey has changed to reflect Federal agency reorganizations. The graduate student survey universe was expanded in 1976 from doctorate institutions only to include master's institutions as well.

The FY 1984 expenditures, January 1984 and 1985 personnel, and fall 1984 graduate student surveys sampled their respective survey universes in an effort to reduce institution response burden. Sampling was restricted to nondoctorate-granting institutions; data were collected for all doctorate-granting institutions, historically black universities and colleges, and federally funded research and development centers (FFRDCs). This practice is scheduled to continue through 1986. For specific information on the sample structure of the individual surveys, consult sections 4, 5, and 6.

In 1978 NSF initiated an experiment in biennial survey cycles for the 1978-79 processing year. The plan, developed in an attempt to reduce respondent burden, was to conduct the full-scale surveys biennially, with abbreviated questionnaires involving fewer data items and reduced populations in the intervening years. The FY 1978 expenditure survey, fall 1978 graduate student survey, and January 1979 employment survey thus involved doctorate-granting institutions and key data cells only; the Federal support survey was not affected.

After a single cycle, NSF determined that the biennial changes were not beneficial in reducing burden either on the institutions or on NSF, and the annual pattern was reinstated. The reduced populations and restricted data cells for the one year demand that the data user interpret the data for those years with care; for example, data aggregates should not be treated as national totals. See the discussion of each survey for particulars.

The 1980 expenditures survey included an optional item regarding current fund expenditures for S/E research equipment. This item became a standard part of the questionnaire in 1981.

The only other major change in survey content which has occurred in recent years has been the addition of four faculty data items to the graduate student survey. Response to these items was optional in 1982 and they became a standard part of the questionnaire form in 1983 and 1984.

Each of the four surveys is described in more detail in the following sections, and in the publications listed in appendix J. These publications contain descriptions of survey methodology, reproductions of the data collection instruments, and definitions of the data elements collected. Over the years, definitional changes have taken place in the collected variables covered by these four surveys; institutional characteristics have changed, and a number of special situations have occurred. This information is recorded in the technical notes section of each survey's statistical report and should be reviewed by the prospective data user prior to any analytical use of the data.

Section 2

THE ACADEMIC SCIENCE & ENGINEERING STATISTICS DATA

2.1 THE INTEGRATED DATA BASE

Although the four UNISG surveys are operated independently according to different schedules and, therefore, cannot be readily merged into a single unit, all recent computer systems development has been oriented toward a closely-knit set of data structures known collectively as the Integrated Data Base.

The Integrated Data Base, as currently implemented on an IBM 370 computer system, permits the storage of detailed questionnaire data from a period of years. It is integrated in the sense that common data management logic is used for all access to the data, a compatible code structure is used within all the member records, and multiple data years are generally available within a single record. The overall data base is oriented toward institutional-level records, with each such institution uniquely identified by a 6-digit FICE (Federal Interagency Committee on Education) code, or its NSF-assigned equivalent. The FICE codes employed are those presented in the annual NSF publication Code Book for Compatible Statistical Reporting of Federal Support to Universities, Colleges and Selected Nonprofit Institutions, copies of which are available from Mr. Richard Bennof, UNISG. Data storage and retrieval capabilities are provided for the Survey of Graduate Science and Engineering Students and Postdoctorates at both a departmental and an institutional level; data for the other three surveys are accessed at the institutional level. The Integrated Data Base does not at present exist on a single data tape.

Capabilities have not yet been provided for direct use of the data base through outside users' own computer terminals. Considerations of data base integrity and item confidentiality, as well as the storage and formatting costs involved, have thus far precluded this possibility; this decision is being reviewed, however, in light of expressed user needs.

2.2 SUMMARY OF MAJOR CHANGES IN DATA TAPES

Three of the four surveys in the data base, the Survey of Scientific and Engineering Expenditures, the Survey of Scientific and Engineering Personnel, and the Survey of Graduate Science and Engineering Students and Postdoctorates, have undergone substantial changes over the years. Since 1980, the data base has included essentially only those cells currently being collected. Since multiyear archival tapes are generated directly from the data base, their contents reflect only those data cells included in the most recent survey year on the tape.

Multiyear tapes from the previous survey cycle will continue to be available for those interested in access to data cells which are no longer collected. The users of such tapes must understand, however, that no attempt has been made to update these older tapes as corrections to prior-year data have been received.

Section 3

SURVEY DATA TAPES

3.1 TYPES OF DATA TAPES GENERATED

After completion of the annual data processing cycle for each of the four surveys previously mentioned, the data collected during the course of the survey are stored on magnetic tape for both public use and archival purposes. For each survey a multiyear tape containing all data currently stored in the disk data base for that survey is generated; the current multiyear tape thus contains an up-to-date version of data for the most recent eight survey years, including any corrections to prior-year data which may have been submitted by survey respondents.

Data for earlier years are available on single-year tapes and as part of earlier multiyear tapes. Data for these years are not updated on a regular basis as are those for later years.

3.2 PUBLIC USE TAPES

"Archival" tapes are those which are generated for NSF's own backup and analytical use. "Public-use" tapes, in contrast, are versions which are specifically generated for distribution to data users outside NSF. As such, these latter tapes omit any information which is considered by NSF or by an institution to be confidential.

Names and address of individuals who completed the questionnaires are omitted from public-use expenditures and employment survey tapes. For both the expenditures and employment surveys, the institutions may designate specific data items as confidential, although most choose not to exercise this option. Finally, there are certain data items in the expenditures survey which are always considered to be confidential. The sections describing the individual surveys should be consulted for details.

Copies of the full archival tapes are not made available to users outside of NSF unless the Foundation has authorized, in writing,

the generation and delivery of such tapes to the specific user. The tapes are transmitted with a warning that they contain confidential data. For information on the release of confidential data, please contact Mrs. Penny D. Foster, Study Director, Universities and Nonprofit Institutions Studies Group, at (202) 634-4629.

3.3 DATA TAPE FORMAT

The records are written onto magnetic tape in card-image format with a logical record length of 80 characters; the records are blocked by a factor of 100 for a physical block length of 8000 bytes. The storage code is 9-track EBCDIC at 6250 bpi. Each current archival tape is an IBM standard labeled tape; public use tapes are also normally created with IBM standard labels. The institutional records are typically sequenced in ascending order by FICE code, by fiscal year within FICE code, and by record type within FICE code and fiscal year.

Tapes without standard labels in ASCII, or with different blocking factors, can be generated upon request at no extra charge. Tapes with lower densities may involve a small additional charge if extra tape reels are required.

The tapes containing data from the 1967-71 Applications for NSF Traineeships differ from the format descriptions above; see section 8 for details.

3.4 CODES USED ON DATA TAPES

Apart from alphabetic information such as names of institutions, departments, and cities, most identifying information on the survey data tapes is represented by numeric codes. Most of the allowed values, together with their meanings, are included in the detailed format descriptions in the following sections or are listed in the appendices.

Institution, school, and department identifiers (FICE, SIN, and DIN codes, respectively) are identified on each tape by the accompanying institution, school, or department name. Any user desiring a listing of institutions can obtain from SRS the cur-

rent edition of the Code Book for Compatible Statistical Reporting of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions. SIN codes are FICE codes with a school sequence number added. DIN codes are discipline codes with a departmental sequence number added. (See appendix E.)

Section 4

SURVEY OF SCIENTIFIC AND ENGINEERING EXPENDITURES AT UNIVERSITIES AND COLLEGES

4.1 SURVEY POPULATION AND DATA ITEMS

The National Science Foundation's (NSF's) Survey of Scientific and Engineering Expenditures at Universities and Colleges originated in 1954 and has been conducted annually since 1972. The population surveyed in most years has consisted of the 500 to 600 universities and colleges which grant a graduate science or engineering degree and/or annually perform at least $50,000 in separately budgeted research and development; these institutions account for over 95 percent of the Nation's academic R&D expenditures. In addition, approximately 17 academically administered Federally funded research and development centers (FFRDC's) are surveyed.

Beginning with FY 1984, the survey was conducted as a sample survey. The sample included all scientific and engineering (S/E) doctorate-granting institutions, all historically black universities and colleges, all FFRDC's, and a probability sample of the remaining institutions. Further information on the sample structure may be obtained by contacting the survey monitor.

In recent years, the expenditures survey has collected information on three areas of academic spending for scientific and engineering activities: current fund separately budgeted R&D expenditures by source of funds and field of S/E, current fund research equipment expenditures, and capital expenditures for S/E activities.

Two significant changes from other survey years were made for the FY 1978 survey as part of an NSF experiment with biennial reductions in the survey scope. First, unlike the FY 1972-77 and 1979-84 surveys, the survey population for FY 1978 was restricted to doctorate-granting institutions and FFRDC's. Secondly, in contrast to the other years, the FY 1978 survey collected information via a shortened survey form which included a limited number of items.

While all surveys in the Integrated Data Base have collected data on separately budgeted R&D expenditures by source of funds (total and Federal) and by field of science/engineering, the FY 1978 form omitted questions on capital expenditures for scientific activities. Expenditures for instruction and departmental research and character of work (e.g., basic vs. applied research) were collected annually during FY 1972-77, but were discontinued as of FY 1978 and are not on the current multiyear archival tapes. See appendix B for the data elements available for each year.

Appendix B documents the availability of individual data elements for each year. Data elements 1800-1880 were added to the survey as an optional item in FY 1979 and 1980 and have been included as a standard item since 1981.

Facsimiles of the FY 1977, FY 1978, FY 1981 and FY 1984 questionnaires are provided in appendix I. The FY 1982 and FY 1983 questionnaires are identical to that used in FY 1984. The FY 1979 and FY 1980 questionnaires are identical to FY 1981 except that item 4 was optional in FY 1980 and was not part of the FY 1979 survey.

4.2 DATA TAPES

The current multiyear tape, available in fall 1985-86, contains data for Fiscal Years 1977-84. (See section 3.) This tape includes for each of these survey years those items which correspond to the FY 1984 survey form; it does not contain some items or levels of detail which were collected in prior years but have no counterpart in the current survey. Such data items are available only on the FY 1972-79, 1973-80, 1974-81, 1975-82, and 1976-83 multiyear tapes generated at the end of previous survey cycles; however, the user must be warned that no attempt has been made to update those tapes with any data corrections which may have been received. Data for FY 1972, 1973, 1974, 1975, and 1976 are available either on single-year tapes or as separate data files on a single tape.

Data items which were collected during prior surveys but are no longer maintained on the multiyear tapes include the following:

- for FY 1975 and FY 1976, the percentage of separately budgeted R&D expenditures in each individual field which was devoted to basic research in that field. Separate percentages were collected for total R&D and for federally funded R&D. Note that the basic research percentage is still collected at the total (i.e., all-field) level for both total R&D and federally funded R&D, but it is considered a confidential item and does not appear on the public-use tapes. (See section 5.4.)

- for FY 1972-77, total and federally funded current expenditures for instruction and departmental research, by major area of science/engineering.

- for FY 1972-79, the percentage of total R&D and federally funded R&D expenditures devoted to applied research and to development.

4.3 DATA TAPE RECORD FORMATS

Each data tape, whether single-year or multiyear, may contain four different record types, formatted as shown below. There are institution header records, respondent records, address records, and data records. The public-use tapes do not contain respondent records or address records.

4.3.1 Institution Header Records

The institution header record provides basic identifying data for a given institution. One record of this type is present for each institution for each survey cycle in which it participated; it is always the first record for that institution in a given year. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year
9	Record Type = 1

10-15	UNISG Code (first two digits indicate the State code, last four digits are a sequence number)
16	Region Code (last digit only) (See appendix A.)
17	Type of Institution 1 = College or University 3 = Federally Funded Research and Development Center
18	Highest S/E Degree Granted by Institution 1 = Doctorate 2 = Master's 3 = Bachelor's 4 = No S/E Degree (may grant bachelor's or higher in nonscience program) 8 = Two-Year Program
19-20	Type of Control 11 = Public/Federal 12 = Public/State 13 = Public/Local 20 = Private
21-45	Institution Name
46-63	City Name
64-67	State Name
68-72	ZIP Code
73-80	Not Used

4.3.2 Respondent Records

The respondent record identifies the person who filled out the questionnaire for this institution during the most recent survey. This would be the respondent for the FY 1984 survey if the institution participated in that survey, or the most recent prior respondent if not. This record is the second record for each institution and year. The public-use tapes do not contain respondent records. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year
9-10	Record Type = 21

11-30	Respondent Name
31-50	Respondent Title
51-53	Respondent Telephone Area Code
54-60	Respondent Telephone Number
61-64	Respondent Telephone Extension
65-80	Not Used

4.3.3 Address Records

The address record provides additional information for those institutions for which the City, State, and ZIP code provided in the institution header record do not constitute a sufficiently complete address. The public use tapes do not contain address records. When present, this record is the third record for that institution and year. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year
9-10	Record Type = 22
11-35	Additional Address Data
36-80	Not Used

4.3.4 Data Records

Data records contain the numerical responses to the survey questionnaire items. These data records are identified by line numbers corresponding to the line numbers on the FY 1984 questionnaire. All data items are expressed in thousands of dollars. For each data line on the questionnaire to which a non-zero response has been received, a data record is present. For total lines (i.e., line numbers which end in "00") in each questionnaire item, a data record is present regardless of whether a zero or nonzero response has been received. Since each questionnaire line can have up to three columns of data, provision is made on the data record for three columns of responses. Associated with each data column is a status code which indicates the source and/or special treatment of the data. Format of the data records is

COLUMNS	CONTENTS

1-6	FICE Code
7-8	Fiscal Year
9	Record Type = 3
10-13	Questionnaire Line Number
14-19	Data Column 1
20	Status Code for Data Column 1 N = Data Not Available C = Confidential Response E = Estimated by NSF I = Imputed by Computer System for Nonresponse
21-26	Data Column 2
27	Status Code for Data Column 2
28-33	Data Column 3
34	Status code for Data Column 3
35-80	Not Used

In most cases, an "N" status code indicates that data were not collected from this institution in the particular year. Unused high-order columns (e.g., column 3 on item 2) are blank filled.

Appendix B contains a listing of all valid line and column numbers, together with their meanings and the years for which each is applicable. As indicated earlier, some of these data cells are excluded from public-use tapes.

For additional information, the user is advised to consult the actual questionnaire forms, as provided in appendix I and in the publications listed in appendix J. It should be noted that although the meanings of some line numbers have been changed or even exchanged over the period from FY 1972 to FY 1984, the line references for these years have all been made consistent with the FY 1984 format to facilitate data trend analyses. Details which are no longer collected, such as the breakdown of "State and local" sources into the individual components or the separation of "private foundations & voluntary health agencies" from "other sources," are not present on the current multiyear tape.

4.4 DATA CONFIDENTIALITY

To protect respondents' privacy, the public-use tapes do not contain respondent records or address records. In addition, the

public-use tapes do not contain any data reported concerning basic research, applied research, or development as a percentage of R&D expenditures. The public-use tapes also omit the data reported under institutional funds (current line 1160) on separately budgeted institutional funds and underrecovery of indirect costs and cost sharing (collected on lines 1161 and 1162, respectively, for Fiscal Years 1978-84), as these data are considered confidential.

Otherwise, the public-use tapes contain data records for all institutions except those few which have requested that their data be kept confidential. The number of institutions which have requested data confidentiality, by fiscal year, are as follows:

Fiscal Year	No. of Institutions	Fiscal Year	No. of Institutions
1972	19	1979	0
1973	5	1980	0
1974	1	1981	0
1975	0	1982	0
1976	0	1983	0
1977	0	1984	0
1978	0		

The public-use tapes are available to any interested user; see inside front cover for ordering procedures.

4.5 DATA TAPE AVAILABILITY

For data users interested only in the most current year's data, a tape containing only FY 1984 data is available. This tape should not be used in conjunction with earlier multiyear tapes to determine trends because modifications to prior-year data have been submitted by the respondent institutions. A FY 1985 single-year data tape and a FY 1978-85 multiyear tape will be available in the fall of 1986-87.

The current multiyear tape covers FY 1977-84. Earlier data for FY 1972, 1973, 1974, 1975, and 1976 are available either on separate tapes or as separate data files on a single tape. These data tapes are available for any user interested in data

items from previous survey years which are not contained on the new tapes. (See section 2 and above discussion.) Note, however, that no attempt has been made to update these tapes with any data corrections which may have been received. Formats for the earlier multi- and single-year tapes are discussed below.

The survey populations for these years are as follows:

Fiscal Year	No. of Academic Institutions	No. of FFRDC's
1972	591	23
1973	591	23
1974	597	22
1975	537	22
1976	536	21
1977	537	21
1978*	317	18
1979	564	19
1980	562	19
1981	562	19
1982	562	19
1983	562	19
1984**	403	17

*In an effort to reduce respondent burden, the 1978 survey population included doctorate-granting institutions and key data cells only.

**In an effort to reduce respondent burden, the 1984 survey population included all doctorate-granting institutions, historically black universities and colleges, FFRDC's, and a sample of nondoctorate-granting institutions. (See section 4.7.)

For further information regarding data tape availability or contents, please contact:

Quantum Research Corporation
5454 Wisconsin Avenue, Suite 1125
Chevy Chase, MD 20815
(301) 657-3070

4.6 FORMATS OF PRIOR-YEAR DATA TAPES

The formats employed in prior-year tapes for institution header records, respondent records, and address records are identical to those employed for the current multiyear tapes. The data records differ slightly only for those questionnaire data items which had more than three data columns (e.g., data for line 1100 in FY 1972). The format for such data records is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year
9	Record Type = 3
10-13	Questionnaire Line Number
14-19	Data Column 1
20	Status Code for Data Column 1 N = Data Not Available blank = Normal Response C = Confidential Response E = Estimated by NSF I = Imputed by Computer System for Nonresponse
21-26	Data Column 2
27	Status Code for Data Column 2
28-33	Data Column 3
34	Status Code for Data Column 3
35-40	Data Column 4
41	Status Code for Data Column 4
42-80	Not Used

For the specific contents of the various questionnaire data lines, the user is advised to consult the actual questionnaire forms, as provided in appendix I and in the publications listed in appendix J. It should be noted that although there were minor variations in the questionnaires used between FY 1972 and FY 1977, the line references for these years were all made consistent with the FY 1977 format.

The questionnaire line numbers on the data records for FY'S 1979-

84 correspond to those used on the questionnaire forms for those years. For FY 1978 and FY 1979, line 1125 is equivalent to the sum of lines 1120 and 1130 in FY 1977 and previous fiscal years, while line 1175 is equivalent to the sum of lines 1140 and 1170. Data from lines 1161 and 1162 and data from columns 2, 3, and 4 of lines 1100 and 1110 in all survey years are considered confidential and are excluded from the public-use tapes.

4.7 FY 1984 SAMPLE COMPOSITION

In an effort to reduce respondent burden, the 1984 survey was sent only to a sample of the institutions surveyed in previous years. This statistical sample was composed of the following strata:

Stratum	No. in Population	No. in Sample	Sampling Rate
Doctorate-granting institutions	327	327	100%
Historically black universities and colleges not included in the above stratum	26	26	100%
Probability stratum of other nondoctorate-granting institutions	208	50	31%
Federally funded research and development centers (FFRDC's)	17	17	100%
Totals	578	420	--

This sample was designed by NSF to yield national estimates only. While lower level estimates could be derived from the sample, they would not necessarily be meaningful because of large associated standard errors. Specific information on the institutional composition of this sample, if needed, can be obtained from either of the points of contact cited below.

Detailed data were collected and/or imputed from all of the 420 institutions in the sample and are present on the data tapes; no FY 1984 data are provided on the tapes for the nonsampled institutions.

For any additional information regarding the survey which is not readily available in the publications cited in appendix J, please contact:

Ms. Judith F. Coakley or Mrs. Marge Machen
National Science Foundation
Division of Science Resources Studies
Room L-602
1800 G Street, N.W.
Washington, D.C. 20550
(202) 634-4673

Section 5

SURVEY OF SCIENTIFIC AND ENGINEERING PERSONNEL EMPLOYED AT UNIVERSITIES AND COLLEGES

5.1 SURVEY POPULATION AND DATA ITEMS

The National Science Foundation's (NSF's) Survey of Scientific and Engineering Personnel Employed at Universities and Colleges has been conducted periodically since April 1954 and annually since January 1973. All U.S. universities and colleges which employ scientists or engineers are usually surveyed, as are approximately 17 academically administered Federally funded research and development centers (FFRDC's).

Beginning with the January 1984 survey, NSF converted from a full population survey of approximately 2,200 institutions to a sample survey of approximately 1,100 institutions. Full- and part-time employment were used as the variables for a stratified sampling scheme. A certainty stratum included all doctorate-granting institutions with S/E programs, all FFRDC's, and all historically black universities and colleges. A probability sample of the institutions within each of the remaining four strata was selected by NSF and, along with the certainty stratum, constituted the 1984 and 1985 survey populations. Further information on the sample structure may be obtained from the survey monitor.

The data variables collected over the years have primarily consisted of headcounts of full- and part-time scientists and engineers by sex and S/E field, highest earned degree, and estimates of the extent of R&D involvement on a full-time-equivalent (FTE) basis. The particular measures and combinations collected have changed over the years.

Prior to January 1979, data were collected for both full- and part-time personnel by the function (teaching, research, or other) in which they were primarily employed, for each specific field of science or engineering. Headcounts for both full- and part-time personnel were also collected by highest earned degree and function of primary employment. Additional questionnaire items requested headcounts for scientists and engineers with

doctorate degrees by broad S/E area and employment status, headcounts for full-time personnel by detailed field and sex, and headcounts for technicians by broad area and primary function. FTE counts were collected only for all-field totals prior to 1978 and were available by employment status and primary function.

Beginning with the 1978 survey, the item on personnel holding S/E doctorates was dropped and a new item on FTE counts by detailed field, including the percentage of the FTE count devoted to R&D activities, became a permanent part of the survey questionnaire. This item, including full- and part-time headcounts by detailed S/E field, was considered optional in 1978 and was the only item included in the January 1979 survey. All items on distribution of personnel by degree level or by sex were omitted from the shortened 1979 form but returned to the full-scale survey form in 1980. The items on function of primary employment and the item on technicians last appeared on the 1978 survey form.

In addition to the reduced number of data items on the January 1979 survey, the scope of the survey was further restricted in that only doctorate-granting institutions and FFRDC's were surveyed. Prospective data users must therefore exercise care and judgment in interpreting and utilizing the 1979 data; data aggregates, for example, should not be treated as national totals. Survey data items have not changed since restoration of the full-scale form in 1980.

Facsimiles of the January 1977, 1978, 1979, 1980, 1981, 1982, and 1985 questionnaires are provided in appendix I. The 1983 and 1984 questionnaires are identical to 1985.

5.2 DATA TAPES

The current multiyear tape, available in fall 1985-86, contains data for January 1978-85. (See section 3.) For each of these survey years this tape includes those items which correspond to the January 1985 survey form; it does not contain some items or levels of detail which were collected in prior years but have no counterpart in the current 1985 survey. Such data items are available on the January 1973-80, 1974-81, 1975-82, and 1976-83 multiyear tapes generated at the end of previous survey cycles; however, the user must be warned that no attempt has been made to

update those tapes with any data corrections which may have been received. Data for January 1973, 1974, 1975, 1976, and 1977 are available either on single-year tapes or as multiple data files on a single data tape.

Data items which were collected during prior surveys but are no longer maintained on the current multiyear tapes include the following:

- all information on function of primary employment;
- all information by field on scientists/engineers with doctorates; and
- all information on technicians.

5.3 DATA TAPE RECORD FORMATS

Each data tape, whether single-year or multiyear, may contain four different record types, formatted as shown below. There are institution header records, respondent records, address records, and data records. The public-use tapes do not contain respondent records or address records.

5.3.1 Institution Header Records

The institution header record provides basic identifying data for a given institution. One record of this type is present for each institution surveyed every year; it is always the first record for that institution in a given year. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Year
9	Record Type = 1
10-15	UNISG Code (first two digits indicate the state code, the last four digits are a sequence number)
16	Region Code (last digit only) (See appendix A.)
17	Type of Institution

	1 = College or University
	3 = Federally Funded Research and Development Center
18	Highest S/E Degree Granted by Institution
	1 = Doctorate
	2 = Master's
	3 = Bachelor's
	4 = No S/E Degree
	8 = Two-Year Program
19-20	Type of Control
	11 = Public/Federal
	12 = Public/State
	13 = Public/local
	20 = Private
21-45	Institution Name
46-63	City Name
64-67	State Name
68-72	ZIP Code
73-80	Not Used

5.3.2 Respondent Records

The respondent record identifies the person who last prepared a survey questionnaire for this institution. This record is the second record for each institution and year. The public-use tapes do not contain respondent records. Its format is

COLUMNS	CONTENTS
1-6	FICE CODE
7-8	Year
9-10	Record Type = 21
11-30	Respondent Name
31-50	Respondent Title
51-53	Respondent Telephone Area Code
54-60	Respondent Telephone Number
61-64	Respondent Telephone Extension
65-80	Not Used

5.3.3 Address Records

The address record provides additional information for a small number of institutions for which the City, State, and ZIP code provided in the institution header record do not constitute a sufficiently complete address. The public-use tapes do not contain address records. When present, this record is the third record for that institution and year. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Year
9-10	Record Type = 22
11-35	Additional Address Data
36-80	Not Used

5.3.4 Data Records

Data records contain the numerical responses to the various survey questionnaire items. These data records are identified by line numbers corresponding to the line numbers on the January 1985 questionnaire. For each data line on the questionnaire to which a nonzero response has been received, a data record is present. For total lines (i.e., line numbers which end in "00") in each questionnaire item, a data record is present regardless of whether a zero or nonzero response has been received. Since each questionnaire line can have up to six columns of data, provision is made on the data record for six columns of responses. Associated with each data column is a status code, which indicates the source and/or special treatment of the data. The format of the data records is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Year
9	Record Type = 3
10-13	Questionnaire Line Number
14-19	Data Column 1
20	Status Code for Data Column 1 N = Data Not Available*

	blank = Normal Response C = Confidential Response E = Estimated by NSF I = Imputed for Nonresponse
21-26	Data Column 2
27	Status Code for Data Column 2
28-33	Data Column 3
34	Status Code for Data Column 3
35-40	Data Column 4 (for lines 27xx, data are provided with one or two decimal places)
41	Status Code for Data Column 4
42-47	Data Column 5 (for lines 27xx, data are provided with one or two decimal places)
48	Status Code for Data Column 5
49-54	Data Column 6 (used only for lines 26xx for 1980 and 1981)
55	Status Code for Data Column 6
56-80	Not Used

*In most cases, an "N" status code indicates that data were not collected from this institution in the particular year. Unused high-order columns, such as columns 4-6 on survey item 1, and columns 5-6 on item 3, are blank-filled.

For additional information the user is advised to consult the actual questionnaire forms, as provided in appendix I and in the publications listed in appendix J. Although the meanings of many item numbers and line numbers have been changed over the period from 1973 to 1985, the item and line references for these years have all been made consistent with the January 1985 format to facilitate data trend analyses. Details which are no longer collected, such as headcounts by field for individuals with doctorates, breakdowns by function of primary employment, or information on technicians are not present on the current multi-year tapes.

5.4 DATA CONFIDENTIALITY

To protect the respondents' privacy, the public-use tapes do not contain any respondent records or address records. These tapes also omit data records for those few institutions which have requested that their data be kept confidential. The number of

institutions which have requested such data confidentiality, by year, are as follows:

January	Number of Institutions	January	Number of Institutions
1973	13	1979	0
1974	16	1980	11
1975	17	1981	1
1976	13	1982	8
1977	9	1983	11
1978	11	1984	6
		1985	4

5.5 DATA TAPE AVAILABILITY

For data users interested only in the most current year's data, a tape containing only January 1985 data is available. This tape should not be used in conjunction with earlier multiyear tapes to determine trends because modifications to prior-year data have been submitted by the respondent institutions.

The current multiyear data tape covers January 1977-85. Data for January 1973, 1974, 1975, and 1976, and 1977 are available either on separate tapes or as multiyear data sets on a single tape. These data tapes are available for any user interested in data items from previous survey years which are not contained on the new tapes. (See section 2 and above discussion.) Note, however, that no attempt has been made to update these tapes with any data corrections which may have been received. Formats for the earlier multi- and single-year tapes are discussed below.

The survey populations for these years are as follows:

January	No. of Academic Institutions	No. of FFRDC's
1973	2,198	21
1974	2,198	21
1975	2,197	21
1976	2,177	21

1977	2,161	21
1978	2,161	21
1979*	317	19
1980	2,219	19
1981	2,216	19
1982	2,199	19
1983	2,189	19
1984**	1,115	19
1985**	1,102	17

*In an effort to reduce respondent burden, the 1979 survey population included doctorate-granting institutions and key data cells only.

**In an effort to reduce respondent burden, the 1984 and 1985 survey populations included all doctorate-granting institutions, historically black universities and colleges, FFRDCs, and a sample of nondoctorate-granting institutions. (See section 5.7.)

For further information regarding data tape availability or contents, please contact:

Quantum Research Corporation
5454 Wisconsin Avenue, Suite 1125
Chevy Chase, MD 20815
(301) 657-3070

5.6 FORMATS OF PRIOR-YEAR DATA TAPES

The formats employed in prior-year tapes for institution header records, respondent records, and address records are identical to those employed for the current multiyear tapes.

For the specific contents of the various questionnaire data record lines and columns, the user is advised to consult the actual questionnaire forms, as provided in appendix I and in the publications listed in appendix J. The questionnaire line and columns numbers on the data records for single-year tapes correspond to those used in that year's questionnaire.

5.7 JANUARY 1984 AND JANUARY 1985 SAMPLE COMPOSITION

In an effort to reduce respondent burden, the January 1984 and January 1985 surveys were sent only to a sample of the institutions surveyed in previous years. This statistical sample was composed of the following strata:

Stratum	No. in Population	No. in Sample	Sampling Rate
Doctorate-granting institutions	333	333	100%
Historically black universities and colleges not included in the above stratum	87	87	100%
Certainty stratum of nondoctorate-granting institutions with >275 full-time and >75 part-time scientists & engineers	126	126	100%
Probability stratum of nondoctorate-granting institutions with 80-275 full-time and <75 part-time scientists & engineers	154	138	90%
Probability stratum of nondoctorate-granting institutions with 40-80 full-time and <75 part-time scientists & engineers	338	136	40%
Probability stratum of nondoctorate-granting institutions with 10-40 full-time and <75 part-time scientists & engineers	865	253	29%
Probability stratum of nondoctorate-granting institutions with <10 full-time and <75 part-time scientists & engineers	302	29	10%
Federally funded research and development centers (FFRDC's)	17	17	100%
Totals	2,222	1,119	--

The above figures reflect the 1985 population and sample. The 1984 figures are slightly different, but do not vary in any important characteristic.

This sample was designed by NSF to yield national estimates only. While lower level estimates could be derived from the sample, they would not necessarily be meaningful because of large associated standard errors. Specific information on the institutional composition of this sample, if needed, can be obtained from either of the points of contact cited below.

Detailed data were collected and/or imputed from all of the 1119 institutions in the 1985 sample and the 1115 institutions in the 1984 sample. Data for all sampled institutions are present on the data tapes; no 1984 and 1985 data are provided on the tapes for the nonsampled institutions.

For additional information regarding the survey not readily available in the publications cited in appendix J, please contact:

Ms. Judith F. Coakley or Ms. Esther F. Gist
National Science Foundation
Division of Science Resources Studies
Room L-602
1800 G Street, N.W.
Washington, D.C. 20550
Telephone: (202) 634-4673

Section 6

SURVEY OF GRADUATE SCIENCE AND ENGINEERING STUDENTS AND POSTDOCTORATES

6.1 SURVEY POPULATION AND DATA ITEMS

Since 1972 the National Science Foundation, in cooperation with the National Institutes of Health, has conducted the annual Survey of Graduate Science and Engineering Students and Postdoctorates (GSESP) to collect data from institutions of higher education, including their medical school affiliates. Originally limited to institutions which grant a doctorate degree in at least one science or engineering (S/E) field, the survey was expanded in 1976 to include S/E master's-granting institutions as well. The GSESP compiles a factual base for assessing the relationship between patterns of financial support for students and shifts in graduate enrollment. It provides the only nationally representative data bank on sources of support of graduate S/E students and their enrollment characteristics, and on S/E postdoctorates.

The scope of the survey remained the same until 1984, when NSF converted from a full population survey of 618 graduate institutions to a sample survey of approximately 400 institutions. All S/E doctorate-granting institutions and all historically black universities and colleges with graduate S/E programs were surveyed; master's-granting institutions were sampled. Further information on the sample structure is available from the survey monitor.

Between 1965 and 1971, data on the support of graduate science students and postdoctorates were collected through institutional applications for NSF traineeships. These data are discussed in section 8 of this guide. The NSF-NIH survey, originally called the Survey of Graduate Science Student Support and Postdoctorals (GSSSP), was designed in 1972 to continue the collection of similar data from an expanded universe of graduate departments in all S/E doctorate-granting institutions.

The survey universe has been expanded considerably since 1972: First, through the inclusion of all medical schools with graduate programs; second, with the addition of new doctorate-granting institutions and departments within the scope of the survey; and third, with the inclusion of all S/E departments in institutions that grant a master's as the highest degree in the sciences and engineering. Note that a significant number of departments are reported as "No degrees"; these are primarily departments in medical schools which grant only the M.D. or other health-professional degrees.

The expansion of coverage to S/E master's-granting institutions was initiated as a parallel survey utilizing an abbreviated form in fall 1976. For comparison purposes, selected fall 1975 data variables were collected for these institutions at the same time. The expanded population (doctorate and master's granting) was again surveyed in parallel for fall 1977.

For fall 1978, as part of an NSF experiment with biennial reductions in survey scope, the population was restricted to doctorate-granting institutions and an abbreviated survey instrument was employed. The full population was restored for the fall 1979 and 1980 surveys, with a revised full-scale survey form sent to both doctorate- and master's-granting institutions.

The data variables collected over the years have consisted primarily of counts of full- and part-time graduate students, with detailed information on sources and mechanisms of major support (e.g., fellowships, traineeships, research assistantships, or teaching assistantships), enrollment status, sex, level of study, citizenship, and racial/ethnic background. For graduate students enrolled part time, data on sex, citizenship, and racial/ethnic background were collected beginning in the fall 1980. Counts of postdoctorates also included source and mechanism information, sex, and beginning with the fall 1982 survey, medical professional degree data. Faculty variables, including rank and tenure status, appointment, and departure data, were added to the survey as optional items in 1982 and included as standard items in the 1983 and 1984 surveys.

The detailed changes from year to year in the data items currently available are shown on the lists in appendix D. For purposes

of an overview, it is useful to think of the questionnaires used over the years as falling into five basic groupings:

- the doctorate-level survey prior to 1978;
- the master's-level survey for 1975-77;
- the abbreviated survey of 1978;
- the combined (master's plus doctorate) universe survey from 1979 through 1983; and
- the combined sample survey beginning in 1984.

The major changes which have occurred as the survey evolved to its present status include the following:

- In contrast to the early doctorate-granting institution survey, no source or mechanism data are now collected separately for first-year students. Whereas there were once some 50 data cells dealing with first-year students, since 1980 there have been only two.
- Fellowships and traineeships have been separately identified for both full-time student and postdoctorates since 1979, whereas previously they were combined.
- Source of support and citizenship information have been collected for female as well as total postdoctorates since 1979. In the pre-1979 doctorate-granting institution surveys, the total number of female postdoctorates was collected in 1977 and 1978.
- Pre-1978 master's-level forms collected only 11 data cells per department, in contrast to the 162 data cells on the 1984 form. These earlier forms omitted all information on mechanisms of support, some of the information on women, and all information on first-year students. Several of the source-of-support categories were combined on these forms.

- The 1978 form, like the early master's forms, involved only 11 data cells per department, but omitted all information on women and postdoctorates in exchange for first-year counts and more detailed source identification.

- Questions on racial/ethnic background were first added to the 1979 survey as an optional section; such data appear on the data tapes beginning with the fall 1980 survey.

- Beginning with the fall 1982 survey, the racial/ethnic breakdown divided the former "Foreign, Other, or Unknown" cell (item 7, column F) into two cells: one comprising U.S. citizens of Other or Unknown background (the new column F), and the second comprising foreigners only (the new column G). The total is now in column H.

- The foreign full-time cell of item 5 (line 8) was dropped in the fall 1982 survey since it is now collected in item 7.

- A new line was added to item 8 (postdoctorates and nonfaculty) in the fall 1982 survey to collect the current eight columns of data for the subset who hold a medical professional degree (e.g., M.D., D.D.S., D.V.M., etc.).

- In fall 1983, items 9 through 12 requesting data on full-time S/E faculty (which formed an optional insert in the fall 1982 survey) became a standard part of the questionnaire. Data collected or imputed on these items in 1983 and 1984 are available on a separate tape; data for fall 1982 are not available because of the low response rate. Note that departments which reported no students or postdoctorates were not required to complete these items. Data for such departments are assigned values of "ON" (not collected) on the data tape.

Prospective data users should keep in mind that not all variables were collected for both doctorate-granting and master's-granting

institutions during the 1975-78 period. If data for doctorate-granting and master's-granting institutions were combined, it would be possible to obtain misleading results. For example, in the fall 1976 survey, data on women part-time students were obtained only from master's-granting institutions. Attributing the sum of this cell to all institutions, doctorate-granting as well as master's-granting, would be a major error. Attention should be given both to the lists of valid lines and columns shown in appendix D and to the questionnaire facsimiles shown in appendix I.

6.2 DATA TAPES

The current multiyear tape, available in fall 1985-86, contains data for the period fall 1976-84. This tape includes for each of these survey years those items which correspond to the fall 1984 survey form; it does not contain some items or levels of detail which were collected in prior years but have no counterpart in the current survey. Such data items are available on the fall 1972, 1973, 1974, and 1975 files; these are available either on single-year tapes or as multiple files on a single tape. The user must be warned, however, that no attempt has been made to update those tapes with any data corrections which may have since been received.

6.3 DATA TAPE RECORD FORMATS

Unlike the other surveys in the Academic Science and Engineering Statistics Program, the GSESP is conducted on a departmental rather than an institutional basis. Each department is uniquely identified by a 12-digit number:

- A 7-digit school identification number which consists of a 6-digit FICE code plus a 1-digit school sequence code identifying a reporting unit within the institution (values of 0-4 are used for graduate schools, 5-9 for medical schools); and

- A 5-digit departmental identification number which consists of a 3-digit discipline code and a 2-digit departmental sequence number; the latter is used to

distinguish between two or more departments in the same discipline within a given school. A listing of the discipline codes employed is provided in appendix E.

Six different record types are used for both multi- and single-year data tapes produced from the fall 1972 and subsequent Surveys of Graduate Science and Engineering Students and Postdoctorates at both doctorate- and master's-granting institutions. These six record types are institution header records, school header records, school survey coordinator records, departmental header records, departmental respondent records, and departmental data records. The data records are sequenced in ascending order by school identification number, departmental identification number, year, and record type.

6.3.1 Institution Header Records

The institution header record provides basic identifying data for a given institution. One record of this type is present for each institution surveyed; it is the first record for that institution.

In addition to institution FICE Code, name, and record type, four variables are present on the record. They are

(1) **Institution's Highest Degree Granted**

Nine values are present, one for each year in the data base. The possible values are

0 - Institution inactive/not surveyed - institution had no departments;
1 - Doctorate-granting - at least one doctorate department exists in the institution; and
2 - Master's-granting.

(2) **Type of Institutional Control**

The possible values are

11 - Public, Federal;

12 - Public, State
13 - Public, local; and
20 - Private.

(3) **CS Classification Code**

This 3-character code is used by the Department of Education's Center for Statistics (CS) to classify institutions. See appendix B of this addendum for valid values.

(4) **State Code**

A 2-digit State code; see appendix A for valid values.

The record format is

COLUMNS	CONTENTS
1-6	Institution FICE Code
7-12	'00000000'
13-14	Year
15	Record Type = 1
16-55	Institution Name
57-62	Not Used
63	Institution Highest Degree
64-65	Institution Type of Control
66-68	Institution NCES Classification Code
69-70	Institution State Code
71-80	Not Used

6.3.2 School Header Records

The school header record provides basic identifying data for a given school or reporting unit within an institution. One record of this type is present for each school surveyed in a given institution; it is the first record for that school.

The record format is

COLUMNS	CONTENTS

1-7	SIN (School Sequence Number) (0-4 = Graduate Schools) (5-9 = Medical Schools)
8-12	'00000'
13-14	Year
15	Record Type = 2
16-55	School Name
56-80	Not Used

6.3.3 School Survey Coordinator Records

Each set of school survey coordinator records provides identifying information on the person who most recently coordinated the collection of the survey questionnaires at a given school. Seven records of this type are provided for each school surveyed. The different records in a set are distinguished by the survey coordinator data line numbers. These records are the second through the eighth records for each school. Their format is

COLUMNS	CONTENTS
1-7	SIN
8-14	'0000000'
15	Record Type = 3
16	Survey Coordinator Line Number 1 = Name 2 = Title 3 = Address, Institution 4 = Address, School or Office 5 = Address, Building or Street 6 = Address, City, State, and ZIP 7 = Telephone
17-56	Survey Coordinator Information
57-80	Not Used

6.3.4 Departmental Header Records

The departmental header record provides basic identifying data for a given science or engineering department. One record of this type is present for each department in a given school for each year surveyed; it is the first record for that department

each year. Its format is

COLUMNS	CONTENTS
1-7	SIN
8-12	Departmental Identification Number (DIN)
8-10	Discipline Code (see appendix E)
11-12	Departmental Sequence Number
13-14	Year
15	Record Type = 4
16-55	Department Name
56	Highest Degree Program Offered by Department (may change from one year to another) 1 = Doctorate 2 = Master's 3 = No S/E Degree Conferred
57-58	Not Used
59-63	Parent DIN (Certain Medical School Units Only)
64-68	Not Used
69	Questionnaire Type Code 1 = Doctorate-Granting Institutions, fall 72 through 75; 2 = Doctorate-Granting Institutions, fall 76; 3 = Doctorate-Granting Institutions, fall 77; 4 = Master's-Granting Institutions, fall 75 and fall 76; 5 = Master's-Granting Institutions, fall 77; 6 = Doctorate-Granting Institutions, fall 78; 7 = Doctorate-Granting Institutions, Master's-Granting Institutions, fall 1979; 8 = Doctorate and Master's-Granting Institutions, fall 1980 9 = Doctorate and Master's-Granting Institutions, fall 1981 10 = Doctorate and Master's-Granting Institutions, fall 1982 11 = Doctorate and Master's-Granting Institutions, fall 1983

	12 = Doctorate and Master's-Granting Institutions, fall 1984
70-80	Not Used

In the case of certain medical school departments, such as surgery and internal medicine, data are collected at specialty level, rather than at departmental level. In such cases, a "parent DIN" is specified on the departmental header record to permit the aggregation of the detailed specialty data into the parent departmental unit.

6.3.5 Departmental Respondent Records

The departmental respondent record provides identifying information on the person, if known, who last prepared the survey questionnaire. This record is the second record for each department each year. Its format is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year
15	Record Type = 5
16-55	Respondent Name
56-75	Respondent Telephone -- in the format "(999) 999-9999 x9999"

6.3.6 Departmental Data Records

Departmental data records contain the numerical responses to the various questionnaire items. The data records are identified by line numbers, similar to the line numbers on the questionnaires. Since most questionnaire lines can have up to 10 columns of data, provision is made on the data record for 10 columns of responses. A data record is present for each data line on the questionnaire to which a nonzero response has been received. For line 6 on each questionnaire (full-time graduate S/E enrollment), however, a data record is present regardless of whether a zero or nonzero response has been received. An unused numeric field will contain a right-justified single zero.

Data for all tapes are maintained in the questionnaire line and column format of the most recent survey year on the tape. Associated with each data column is a status code, which indicates the source and/or special treatment of the data. The format of the data records which include the fall 1984 survey is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year
15	Record Type = 6
16-17	Line Number (1 through 13) (Not necessarily the same as on the questionnaire. See appendix D.)
18-21	Data Column 1
22	Status Code for Data Column 1 (N = Data Not Available* blank = Normal Response E = Estimated I = Imputed for Nonresponse)
23-26	Data Column 2
27	Status Code for Data Column 2
28-31	Data Column 3
32	Status Code for Data Column 3
33-36	Data Column 3
37	Status Code for Data Column 4
38-41	Data Column 5
42	Status Code for Data Column 5
43-46	Data Column 6
47	Status Code for Data Column 6
48-51	Data Column 7
52	Status Code for Data Column 7
53-56	Data Column 8
57	Status Code for Data Column 8
58-61	Data Column 9
62	Status Code for Data Column 9
63-66	Data Column 10
67	Status Code for Data Column 10
68-80	Not Used

*In most cases, an "N" status code indicates that data were not

collected from this institution in the particular year.

Data records for 1983 and 1984 faculty data are separate files on a single tape. The format of the faculty data records is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year
15	Record Type = 6
16-17	Line Number (15 through 30)
18-21	Data Column 1
22	Status Code for Data Column 1 (N = Data Not Available blank = Normal Response E = Estimated I = Imputed for Nonresponse)
23-26	Data Column 2
27	Status Code for Data Column 2
28-31	Data Column 3
32	Status Code for Data Column 3
33-36	Data Column 4
37	Status Code for Data Column 4
38-80	Not used

6.4 DATA CONFIDENTIALITY

Data from the Survey of Graduate Science and Engineering Students and Postdoctorates are not confidential.

6.5 DATA TAPE AVAILABILITY

For data users interested only in the current year's data, a tape containing only fall 1984 data is available. This tape should not be used in conjunction with earlier multiyear data tapes to determine trends because modifications to prior-year data have been submitted by some respondent institutions. A fall 1985 single-year data tape and a fall 1978-85 multiyear tape will be available in the fall of 1986-87. Data for fall 1976-84 are available on a single data tape.

Data for fall 1972, 1973, 1974, and 1975 are available either on separate tapes or as separate data files on a single tape. These data tapes are available for any user interested in data items from previous survey years which are not contained on the new tapes (see Section 2 and above discussion). Note, however, that no attempt has been made to update these tapes with any data corrections which may have since been received.

The departmental populations are as follows:

Fall	No. of Departments in Doctorate-Granting Institutions	No. of Departments in Master's-Granting Institutions
1972	4,593	
1973	6,571	
1974	7,498	49
1975	7,659	1,263
1976	7,759	1,299
1977	7,988	1,469
1978	8,202	
1979	8,341	1,442
1980	8,516	1,409
1981	8,437	1,432
1982	8,299	1,434
1983	8,204	1,459
1984	8,277	471

Note that the survey population counts for all years may differ from those published in previous Data User Guides as a result of continuing data base corrections. Also, the numbers above refer to enrollment data; since some departments reported consolidated faculty data, the department counts on the faculty data tapes will differ slightly.

6.6 FORMATS OF PRIOR-YEAR DATA TAPES

Earlier archival and public-use tapes employed the same formats as the fall 1977-84 tapes for institutional header records, school header records, survey coordinator records, departmental

header records, and departmental respondent records. Only the departmental data records differed in format, and for these the interpretation of the fields depends on the survey year and the degree level of the institution. These different formats are explained in the following pages.

6.6.1 Doctorate-Granting Institutions, Fall 1972 through Fall 1977

The data records are identified by line numbers, similar to the line numbers on the questionnaires. Since each questionnaire line can have up to 10 columns of data, provision is made on the data record for 10 columns of responses. A data record is present for each data line on the questionnaire to which a nonzero response was received. For the full-time total line on each questionnaire, however, a data record is present regardless of whether a zero or nonzero response was received.

A facsimile of the fall 1977 questionnaire is provided in appendix I. Facsimiles of previous years' questionnaires are provided in the publications listed in appendix J or are available from the Division of Science Resources Studies.

Fall 1972, 1973, 1974, 1975, and 1976 data are all maintained in the fall 1977 questionnaire line and column format. Associated with each data column is a status code, which indicates the source and/or special treatment of the data. The format of the data records is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year (72 through 77)
15	Record Type = 6
16-17	Line Number (1 through 12)
18-21	Data Column 1
22	Status Code for Data Column 1 N = Data Not Available blank = Normal Response E = Estimated

	I = Imputed for Nonresponse
23-26	Data Column 2
27	Status Code for Data Column 2
28-31	Data Column 3
32	Status Code for Data Column 3
33-36	Data Column 4
37	Status Code for Data Column 4
38-41	Data Column 5
42	Status Code for Data Column 5
43-46	Data Column 6
47	Status Code for Data Column 6
48-51	Data Column 7
52	Status Code for Data Column 7
53-56	Data Column 8
57	Status Code for Data Column 8
58-61	Data Column 9
62	Status Code for Data Column 9
63-66	Data Column 10
67	Status Code for Data Column 10
68-80	Not Used

In line 12, data column 1 corresponds to the full-time foreign student item near the bottom of the questionnaire. Data columns 2,3,4, and 5 correspond to item 6, questions A through D. Data columns 6 through 10 correspond to item 7, questions A through E.

6.6.2 Doctorate-Granting Institutions, Fall 1978

One data record is present for each department surveyed. Since the questionnaire collected 11 columns of data for each department, provision is made on the data record for 11 columns of responses. Associated with each data column is a status code, which indicates the source and/or special treatment of the data. A facsimile of a fall 1978 questionnaire form is included in appendix I. The format of the data records is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year (78)
15	Record Type = 6

16-17	'00'
18-21	Data Column A
22	Status Code for Data Column A N = Data Not Available blank = Normal Response E = Estimated I = Imputed for Nonresponse
23-26	Data Column B
27	Status Code for Data Column B
28-31	Data Column C
32	Status Code for Data Column C
33-36	Data Column D
37	Status Code for Data Column D
38-41	Data Column E
42	Status Code for Data Column E
43-46	Data Column F
47	Status Code for Data Column F
48-51	Data Column G
52	Status Code for Data Column G
53-56	Data Column H
57	Status Code for Data Column H
58-61	Data Column I
62	Status Code for Data Column I
63-66	Data Column J
67	Status Code for Data Column J
68-71	Data Column K
72	Status Code for Data Column K
73- 80	Not Used

6.6.3 Doctorate- and Master's-Granting Institutions, Fall 1979

The data record formats and interpretations used for the fall 1979 survey are almost identical to those used on the current multiyear tape. The correspondence between the fall 1979 questionnaire line numbers shown on the facsimile in appendix I and the line numbers on the data records is as follows

	QUESTIONNAIRE		DATA RECORD	
Item	Line	Columns	Line	Columns

5	1-7	A-I	01-07	A-I
5	8	-	08	A
5	9	-	09	A
6	1-3	-	10	A-C
8	1	A-G	11	A-G
8	2	A-G	12	A-G

6.6.4 Master's-Granting Institutions, Fall 1975 through Fall 1977

One data record is present for each S/E department at a given school. Since 11 columns of data were collected for each department (columns A through K), provision is made on the data record for 11 columns of responses. It should be noted that the all 1975 data collected in the course of the fall 1976 survey are also stored in the fall 1976 format. A facsimile of the fall 1977 form for master's-granting institutions is included in appendix I. Associated with each data column is a status code which indicates the source and/or special treatment of the data. The format of the data records is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year (75 through 77)
15	Record Type = 6
16-17	'00'
18-21	Data Column A
22	Status Code for Data Column A N = Data Not Available blank = Normal Response E = Estimated I = Imputed for Nonresponse
23-26	Data Column B
27	Status Code for Data Column B
28-31	Data Column C
32	Status Code for Data Column C
33-36	Data Column D
37	Status Code for Data Column D
38-41	Data Column E
42	Status Code for Data Column E

43-46	Data Column F
47	Status Code for Data Column F
48-51	Data Column G
52	Status Code for Data Column G
53-56	Data Column H
57	Status Code for Data Column H
58-61	Data Column I
62	Status Code for Data Column I
63-66	Data Column J
67	Status Code for Data Column J
68-71	Data Column K
72	Status Code for Data Column K
73- 80	Not Used

6.6.5 Doctorate- and Master's-Granting Institutions, Fall 1980 Through Fall 1984

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year
15	Record Type = 6
16-17	Line Number (1 through 13) (not necessarily the same as on the questionnaire. See appendix D.)
18-21	Data Column 1
22	Status Code for Data Column 1 N = Data Not Available blank = Normal Response E = Estimated I = Imputed for Nonresponse
23-26	Data Column 2
27	Status Code for Data Column 2
28-31	Data Column 3
32	Status Code for Data Column 3
33-36	Data Column 4
37	Status Code for Data Column 4
38-41	Data Column 5
42	Status Code for Data Column 5
43-46	Data Column 6
47	Status Code for Data Column 6

48-51	Data Column 7
52	Status Code for Data Column 7
53-56	Data Column 8
57	Status Code for Data Column 8
58-61	Data Column 9
62	Status Code for Data Column 9
63-66	Data Column 10
67	Status Code for Data Column 10
68-80	Not Used

6.6.6 Doctorate- and Master-Granting Institution Faculty Data: Fall 1983 and Fall 1984

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year
15	Record Type = 6
16-17	Line Number (15 through 30)
18-21	Data Column 1
22	Status Code for Data Column 1 N = Data Not Available blank = Normal Response E = Estimated I = Imputed for Nonresponse
23-26	Data Column 2
27	Status Code for Data Column 2
28-31	Data Column 3
32	Status Code for Data Column 3
33-36	Data Column 4
37	Status Code for Data Column 4

For further information regarding data tape availability or contents, please contact:

Quantum Research Corporation
5454 Wisconsin Avenue, Suite 1125
Chevy Chase, MD 20815
(301) 657-3070

6.7 FALL 1984 SAMPLE COMPOSITION

In an effort to reduce respondent burden, the fall 1984 survey was sent only to a sample of the institutions surveyed in previous years. This statistical sample was composed of the following strata:

Stratum	No. in Population	No. in Sample	Sampling Rate
Doctorate-granting institutions and historically black universities and colleges	346	346	100%
Probability stratum of large master's-granting institutions	45	28	62%
Probability stratum of small master's-granting institutions	224	27	12%
Totals	615	401	--

This sample was designed by NSF to yield national estimates only. While lower level estimates could be derived from the sample, they would not necessarily be meaningful because of large associated standard errors. Specific information on the institutional composition of this sample, if needed, can be obtained from either of the points of contact cited below.

Detailed data were collected and/or imputed from all of the 401 institutions in the sample and are present on the data tapes; no fall 1984 data are provided on the tapes for the nonsampled institutions.

For additional information regarding the survey not readily available in the publications cited in appendix J, please contact:

Mr. J. G. Huckenpahler
National Science Foundation
Division of Science Resources Studies
Room L-602
1800 G Street, N.W.
Washington, D.C. 20550
Telephone: (202) 634-4673

Section 7

APPLICATIONS FOR NSF TRAINEESHIPS

7.1 POPULATION AND DATA ITEMS

Prior to 1972, the National Science Foundation awarded traineeships to graduate students through their educational institutions. The program originated in fall 1965 and continued through fall 1971, but only fall 1967, 1968, 1970, and 1971 data are currently available on tape. During this time, data on the support of graduate students and postdoctorates were collected on the applications for these traineeships. These applications were designed to collect data on nine items: departmental data, the number of graduate degrees granted, types and sources of support of all full-time graduate students enrolled for advanced degrees, "special" students enrolled for graduate course work (full-time or part-time) who were not enrolled for advanced degrees, part-time graduate students enrolled for advanced degrees, faculty members by function, and postdoctoral appointees. These data are not representative of national totals, since the medical and social sciences were not supported extensively by NSF during this period.

7.2 DATA TAPE RECORDS

Two different record types are used on the available data tapes for 1967 through 1971 resulting from the Applications for NSF Traineeships. These two record types are departmental header records and departmental data records.

7.2.1 Departmental Header Records

The departmental header record provides basic identifying data for a given department. One record of this type is present for each department surveyed each year; it is the first record for that department. Its format is

COLUMNS	CONTENTS
1-7	School Identification Number (SIN)
1-6	Institution FICE Code
7	School Sequence Number 0-4 = Graduate Schools 5-9 = Medical Schools
8-12	Departmental Identification Number (DIN)
8-10	Discipline Code (See appendix B of version 3 guide)
11-12	Departmental Sequence Number
13-14	Year (1967 through 1971)
15	Record Type = 4
16	'0'
17-56	Institution/School Name
57-96	Department Name
97	Highest Degree Program Offered by Department 1 = Doctorate; 2 = Master's
98-106	Not Used

7.2.2 Departmental Data Records

Departmental data records contain the numerical responses to the various items. Nine data records are present for each department; the first eight data records contain the responses to line 1 through 8 of item 6, while the ninth record contains the responses to items 7, 8, 9, 10, and 11. The format of each of the first eight data records for each department is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year (1967 through 1971)
15	Record Type = 6
16	Item 6, Line Number (1 through 8)
17-20	Item 6, Data Column A
21	Status Code for Item 6, Data Column A N = Data Not Available blank = Normal Response
22-25	Item 6, Data Column B

26	Status Code for Item 6, Data Column B
27-30	Item 6, Data Column C
31	Status Code for Item 6, Data Column C
32-35	Item 6, Data Column D
36	Status Code for Item 6, Data Column D
37-40	Item 6, Data Column E
41	Status Code for Item 6, Data Column E
42-45	Item 6, Data Column F
46	Status Code for Item 6, Data Column F
47-50	Item 6, Data Column G
51	Status Code for Item 6, Data Column G
52-55	Item 6, Data Column H
56	Status Code for Item 6, Data Column H
57-60	Item 6, Data Column I
61	Status Code for Item 6, Data Column I
62-65	Item 6, Data Column J
66	Status Code for Item 6, Data Column J
67-70	Item 6, Data Column K
71	Status Code for Item 6, Data Column K
72-75	Item 6, Data Column L
76	Status Code for Item 6, Data Column L
77-80	Item 6, Data Column M
81	Status Code for Item 6, Data Column M
82-85	Item 6, Data Column N
86	Status Code for Item 6, Data Column N
87-90	Item 6, Data Column O
91	Status Code for Item 6, Data Column O
92-95	Item 6, Data Column P
96	Status Code for Item 6, Data Column P
97-100	Item 6, Data Column Q
101	Status Code for Item 6, Data Column Q
102-105	Item 6, Data Column R
106	Status Code for Item 6, Data Column R

The format of the ninth record for each department is

COLUMNS	CONTENTS
1-7	SIN
8-12	DIN
13-14	Year (1967 through 1971)
15	Record Type = 6
16	'9'

17-20	Item 7, Data Column A
21	Status Code for Item 7, Data Column A N = Data Not Available blank = Normal Response
22-25	Item 7, Data Column B
26	Status Code for Item 7, Data Column B
27-30	Item 7, Data Column C
31	Status Code for Item 7, Data Column C
32-35	Item 8
36	Status Code for Item 8
37-40	Item 9, Data Column A
41	Status Code for Item 9, Data Column A
42-45	Item 9, Data Column B
46	Status Code for Item 9, Data Column B
47-50	Item 9, Data Column C
51	Status Code for Item 9, Data Column C
52-55	Item 9, Data Column D
56	Status Code for Item 9, Data Column D
57-60	Item 9, Data Column E
61	Status Code for Item 9, Data Column E
62-65	Item 10, Data Column A
66	Status Code for Item 10, Data Column A
67-70	Item 10, Data Column B
71	Status Code for Item 10, Data Column B
72-75	Item 10, Data Column C
76	Status Code for Item 10, Data Column C
77-80	Item 10, Data Column D
81	Status Code for Item 10, Data Column D
82-85	Item 11, Data Column A
86	Status Code for Item 11, Data Column A
87-90	Item 11, Data Column B
91	Status Code for Item 11, Data Column B
92-95	Item 11, Data Column C
96	Status Code for Item 11, Data Column C
97-106	Not Used

7.3 DATA CONFIDENTIALITY

The data collected through the NSF traineeship applications are not confidential.

7.4 DATA TAPE FORMAT

Records for the NSF traineeship applications are written on magnetic tape with a logical record length of 106 characters; the records are also blocked by a factor of 100 for a physical block length of 10,600 bytes. The storage code is 9-track EBCDIC at 1600 bpi. A separate tape is maintained for each year in which data were available. Each tape consists of a single file and is unlabeled. The data records are sequenced in ascending order by school identification number, departmental identification number, and record type.

7.5 DATA TAPE AVAILABILITY

Data tapes are available only for fall 1967, 1968, 1970, and 1971. The departmental populations for these years are as follows:

Fall	No. of Departments in Doctorate-Granting Institutions
1967	3,014
1968	3,190
1970	3,544
1971	3,397

For additional information regarding the survey not readily available in the publications cited in appendix J, please contact:

Mr. J. G. Huckenpahler
National Science Foundation
Division of Science Resources Studies
Room L-602
1800 G Street, N.W.
Washington, D.C. 20550
Telephone: (202) 634-4673

Section 8

SURVEY OF FEDERAL SUPPORT TO UNIVERSITIES, COLLEGES, AND SELECTED NONPROFIT INSTITUTIONS

8.1 AGENCY POPULATION

The interagency system for reporting Federal obligations to universities and colleges was originally established in 1965 under the auspices of the Committee on Academic Science and Engineering (CASE) of the Federal Council for Science and Technology. Since 1968, these data have been collected annually by the National Science Foundation through the Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions. Data are currently supplied by 15 Federal agencies and account for virtually all Federal obligations to academic institutions for R&D activities.

Data may be provided by the agencies at the institution or campus level; however, all records on tapes are maintained at the institutional level, with separate totals for system offices where funds were obligated to a system of institutions and the funding agency was unable to determine the ultimate distribution of the money among the institutions within the system.

More detailed information about the participating agencies and subagencies, the definitions of the categories of support, the S/E fields covered, and the formats used by agencies when submitting data are found in the annual NSF publication Instructions and Specifications for Reporting Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, copies of which are available from the Division of Science Resources Studies.

8.2 DATA TAPES

The current single year and multiyear tapes available in fall 1985-86, contain data for FY 1984 and 1977-84. (See section 3.) These tapes contain for each fiscal year all data items on which agencies have been asked to report since 1971. Additional tapes available in the same format include FY 1971, 1972, 1973, 1974,

1975, 1976, and the 1976 transition quarter.

8.3 DATA TAPE RECORD FORMATS

Each data tape, whether single-year or multiyear, contains two types of records: institution header records and data records.

The FICE codes employed are those presented in the annual NSF publication Code Book for Compatible Statistical Reporting of Federal Support to Universities, Colleges and Selected Nonprofit Institutions, copies of which are available from the Division of Science Resources Studies. Lists of the codes for agencies, regions/States, and S/E fields used for this survey are shown in appendixes A, F, and G, respectively.

8.3.1 Institution Header Records

The institution header record provides basic identifying data for a given institution. One record of this type is present for each institution and year for which obligations were reported; it is always the first record for that institution for each such year. Its format is

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year (1971-84; records for the 1976 Transition Quarter are indicated by "TQ" in this position)
9	Record Type = 1
10-12	Not Used
13-14	State Code (See appendix A)
15-16	Region Code (See appendix A)
17	Type of Institution 1 = College or University 3 = Federally Funded Research and Development Center administered by one or more academic institutions 4 = Nonprofit Institution 5 = Federally Funded Research and Development Center administered

	by one or more nonprofit institutions
18	Highest S/E Degree Granted by Institution 0 = Not Applicable 1 = Doctorate 2 = Master's 3 = Bachelor's 4 = No S/E Degree 8 = Two-Year Program
19-20	Type of Control 0 = Not Applicable 11 = Public/Federal 12 = Public/State 13 = Public/Local 20 = Private
21-45	Institution Name
46-63	City Name
64-67	State Abbreviation
68-72	ZIP Code
73-76	Not Used
77-79	Number of Data Records for This Institution for this Year
80	Not Used

8.3.2 Data Records

Following the institution header record are the data records for that institution, containing the obligations reported by the various agencies. Data records for academic institutions are grouped by agency/subagency code (see appendix F), and within groups are ordered by S/E field code (see appendix G). There is at least one data record for each agency/subagency reporting any obligations to the institution; this is a summary record with a S/E field code of zero, showing obligations in seven basic categories, plus subtotal and total. If there are obligations from that agency/subagency for research and development (R&D) or fellowships, traineeships, and training grants (FTTG's), then there are additional data cards showing the S/E field breakdowns of these two categories. Data at the subagency level are maintained only for DOD and HEW/HHS.

Records for federally funded research and development centers (FFRDC's) and nonprofit institutions are similar to those for

academic institutions, but more limited in scope. No S/E field breakdowns are available for these institutions, and some of the obligation categories are also omitted. For FFRDC's administered by academic institutions (type of institution 3), all categories except non-science are reported, but for nonprofit institutions and FFRDC's administered by nonprofit institutions (type of institution 4 and 5, respectively) only the R&D and R&D Plant categories are used.

Since there is an all-agency summary for each institution in addition to the data for individual agencies, the minimum number of data cards for any institution on the tape is two: one summary record at the all-agency level, and another such record for the specific agency/subagency reporting the obligations. In this case, the data on the two records would be identical. Note that institutions without obligations are not present on the tape.

All data items are expressed in thousands of dollars. It should be noted that where obligations to individual campuses of academic institutions were reported to NSF by the participating agencies, these have been aggregated into the parent institution records; however, obligations reported to the system office of university systems have been retained under the appropriate system office FICE codes. Obligations at both agency and subagency level are maintained for DOD and DHHS (DHEW); for all other reporting agencies, only the total obligations for the entire agency are retained.

The format for data records is as follows:

COLUMNS	CONTENTS
1-6	FICE Code
7-8	Fiscal Year
9	Record Type = 3
10-13	Agency Code (see appendix F)
14-15	S/E Field Code (see appendix G) (nonzero values will only appear for academic institutions)
16	Not Used
17-23	Obligations for Research & Development
24-30	Obligations for Fellowships, Traineeships, and Training Grants

31-37	Obligations for R&D Plant*
38-44	Obligations for Facilities & Equipment*
45-51	Obligations for General Support for Science/Engineering*
52-58	Obligations for Other Science/Engineering*
59-65	Obligations for Non-Science/Engineering Activities*
76-72	Total S/E Obligations* (sum of first six categories)
73-79	Total Obligations*
80	Not Used

*The data fields marked with an asterisk above only appear for S/E field code 00.

8.4 DATA CONFIDENTIALITY

Data from the Survey of Federal Support to Universities, Colleges, and Nonprofit Institutions are not confidential.

8.5 DATA TAPE AVAILABILITY

For data users interested only in current data, a tape containing only FY 1984 data is available. A FY 1985 single-year data tape and a FY 1978-85 multiyear tape will be available in the fall of 1986-87. The current multiyear tape should not be used in conjunction with earlier multiyear tapes to determine trends because modifications to prior-year data have been submitted by the respondent agencies. Data reported by the Department of Education on "Nonscience/Engineering Activities" in FY 1979, 1981, 1982, and 1983 have not been corrected on an individual institution basis; therefore, amounts shown in this category will not add to the adjusted totals shown in the most recent publications.

Data for FY 1971, 1972, 1973, 1974, 1975, 1976, and the 1976 Transition Quarter are available either on single tapes or one tape containing all of these files.

The survey populations for these years are as follows:

FY	TOTAL	ACADEMIC	ACADEMIC FFRDCs	NON-PROFIT	PROFIT FFRDCs
1971	2,414	2,383	31	-	-
1972	2,465	2,434	31	-	-
1973	2,482	2,459	23	-	-
1974	2,659	2,509	21	123	6
1975	2,718	2,512	21	179	6
1976	2,759	2,534	21	199	5
1976 TQ	2,603	2,440	20	143	-
1977	2,801	2,564	21	212	4
1978	3,060	2,732	20	303	5
1979	3,189	2,633	19	531	6
1980	3,186	2,664	19	497	6
1981	3,279	2,709	19	545	6
1982	3,369	2,803	19	541	6
1983	2,820	2,247	19	548	6
1984	2,813	2,359	16	551	7

Note that the survey population counts for all years may differ from those published in previous versions of the Data User Guide as a result of continuing data base corrections.

For additional information regarding data tape availability or contents, please contact:

Quantum Research Corporation
5454 Wisconsin Avenue, Suite 1125
Chevy Chase, MD 20815
(301) 657-3070

For additional information regarding the survey not readily available in the publications cited in appendix J, please contact:

Mr. Richard Bennof
National Science Foundation
Division of Science Resources Studies
Room L-602
1800 G Street, N.W.
Washington, D.C. 20550
Telephone: (202) 634-4673

Appendix A

REGION AND STATE CODES

The following set of region and State codes is used for all surveys comprising the University Science Statistics Integrated Data Base.

Region Code	State Code	Region/State Name
1		**New England**
1	16	Connecticut
1	29	Maine
1	31	Massachusetts
1	39	New Hampshire
1	49	Rhode Island
1	55	Vermont
2		**Middle Atlantic**
2	40	New Jersey
2	42	New York
2	48	Pennsylvania
3		**East North Central**
3	23	Illinois
3	24	Indiana
3	32	Michigan
3	45	Ohio
3	59	Wisconsin
4		**West North Central**
4	25	Iowa
4	26	Kansas
4	33	Minnesota
4	35	Missouri
4	37	Nebraska
4	44	North Dakota
4	51	South Dakota
5		**South Atlantic**
5	17	Delaware
5	18	District of Columbia
5	19	Florida
5	20	Georgia
5	30	Maryland
5	43	North Carolina
5	50	South Carolina
5	56	Virginia
5	58	West Virginia

Region Code	State Code	Region/State Name
6		**East South Central**
6	10	Alabama
6	27	Kentucky
6	34	Mississippi
6	52	Tennessee
7		**West South Central**
7	13	Arkansas
7	28	Louisiana
7	46	Oklahoma
7	53	Texas
8		**Mountain**
8	12	Arizona
8	15	Colorado
8	22	Idaho
8	36	Montana
8	38	Nevada
8	41	New Mexico
8	54	Utah
8	60	Wyoming
9		**Pacific**
9	11	Alaska
9	14	California
9	21	Hawaii
9	47	Oregon
9	57	Washington
10		**Outlying Areas**
10	62	Canal Zone
10	63	Guam
10	64	Puerto Rico
10	65	American Samoa
10	66	Virgin Islands
10	67	Trust Territory of the Pacific Islands

Appendix B

VALID EXPENDITURES SURVEY DATA CELLS

The lists that follow indicate the valid line and column numbers for each segment of the survey population in each survey year; data cells which were collected but which do not correspond to the current multiyear tape are not covered in this appendix. Availability is indicated by the appropriate symbol: D = doctorate institutions only, M = master's institutions only, A = all (doctorate + master's + bachelor's), "-" = not available (in most cases, not collected). These lists should be used in conjunction with the questionnaire facsimiles shown in appendix I.

ITEM NO. 1: R&D EXPENDITURES BY SOURCE

Line #		73-77	78	79	80-84
1100	Total	A	D	A	A
1110	Federal Government	A	D	A	A
1125	State and Local Governments	A	D	A	A
1150	Industry	A	D	A	A
1160	Institutional Funds	A	D	A	A
1161	Separately Budgeted	-	D*	A*	A*
1162	Underrecovery/Cost Sharing	-	D*	A*	A*
1175	All Other Sources	A	D	A	A

NOTE: Line 1125 = sum of lines 1120 and 1130 in FY 77 and earlier years

Line 1175 = sum of lines 1140 and 1170 in FY 77 and earlier years

* Confidential data not shown on public-use tapes.

Col #					
1	Total R&D	A	D	A	A
2	Basic Research	A	-	A	A*

NOTE: Column 2 available only for line 1100 and 1110

* Confidential data not shown on public-use tapes.

ITEM NO. 2: R&D EXPENDITURES BY FIELD

Line #		73-74	75-77	78	79	80-84
1400	Total	A	A	D	A	A
1410	Engineering (Total)	A	A	D	A	A
1411	Aeronautical & Astronautical	-	-	-	-	A
1412	Chemical	-	-	-	-	A
1413	Civil	-	-	-	-	A
1414	Electrical	-	-	-	-	A
1415	Mechanical	-	-	-	-	A
1416	Other	-	-	-	-	A
1420	Physical Sciences (Total)	A	A	D	A	A
1421	Astronomy	A	A	D	A	A
1422	Chemistry	A	A	D	A	A
1423	Physics	A	A	D	A	A
1424	Other	A	A	D	A	A
1430	Environmental Sciences (Total)	A	A	D	A	A
1431	Atmospheric	-	-	-	-	A
1432	Earth Sciences	-	-	-	-	A
1433	Oceanography	-	-	-	-	A
1434	Other	-	-	-	-	A
1440	Mathematical & Computer Sciences (Total)	A	A	D	A	A
1441	Mathematics	A	A	D	A	A
1442	Computer Sciences	A	A	D	A	A
1450	Life Sciences (Total)	A	A	D	A	A
1451	Agricultural	**	A	D	A	A
1452	Biological	**	A	D	A	A
1453	Medical	A	A	D	A	A
1454	Other	A	A	D	A	A
1460	Psychology	A	A	D	A	A
1470	Social Sciences (Total)	A	A	D	A	A
1471	Economics	A	A	D	A	A
1472	Political Science	A	A	D	A	A
1473	Sociology	A	A	D	A	A
1474	Other	A	A	D	A	A
1480	Other Sciences, n.e.c.	A	A	D	A	A

** Biological sciences data prior to 1974 included agricultural sciences. FY 1973 data were retroactively split into agricultural and biological sciences using the relative FY 1974 percentages reported by each institution.

Col #		
1	Total	(Both columns available for every year
2	Federal	in which a given line was valid)

ITEM NO. 3: CURRENT FUND RESEARCH EXPENDITURES BY FIELD

Line #No		81-84
1800	Total	A
1810	Engineering (Total)	A
1811	Aeronautical & Astronautical	A
1812	Chemical	A
1813	Civil	A
1814	Electrical	A
1815	Mechanical	A
1816	Other	A
1820	Physical Sciences (Total)	A
1821	Astronomy	A
1823	Physics	A
1824	Other	A
1830	Environmental Sciences (Total)	A
1831	Atmospheric	A
1832	Earth Sciences	A
1833	Oceanography	A
1834	Other	A
1840	Mathematical/Computer Sciences (Total)	A
1841	Mathematics	A
1842	Computer Sciences	A
1850	Life Sciences (Total)	A
1851	Agricultural	A
1852	Biological	A
1853	Medical	A
1854	Other	A
1860	Psychology	A
1870	Social Sciences (Total)	A
1871	Economics	A
1872	Political Science	A
1873	Sociology	A
1874	Other	A
1880	Other Sciences, n.e.c.	A

Col #		
1	Total	(Both columns available for every year
2	Federal	in which a given line was valid)

ITEM NO. 4: CAPITAL EXPENDITURES BY AREA

Line #		73-77	78	79-84
1700	Total	A	-	A
1710	Engineering	A	-	A
1720	Physical Sciences	A	-	A
1730	Environmental Sciences	A	-	A
1740	Mathematical & Computer Sciences	A	-	A
1750	Life Sciences	A	-	A
1760	Psychology	A	-	A
1770	Social Sciences	A	-	A
1780	Other Sciences, n.e.c.	A	-	A

Col #		
1	Total	(All columns available in each year for which data were collected)
2	Federal	
3	All Other	

Appendix C

VALID EMPLOYMENT SURVEY DATA CELLS

The lists that follow indicate the valid line and column numbers for each segment of the survey population in each survey year; data cells which were collected but which do not correspond to the current multiyear tape are not covered in this appendix. Availability is indicated by the appropriate symbol: D = doctorate institutions only, M = master's institutions only, A = all (doctorate + master's + bachelor's + 2-year institutions), "-" = not available (in most cases, not collected). These lists should be used in conjunction with the questionnaire facsimiles shown in appendix I.

ITEM NO. 1: SCIENTISTS AND ENGINEERS BY HIGHEST DEGREE EARNED

Line #		
2200	Total	
2210	Doctor's	Available only for doctorate institutions for 1979;
2220	First Professional	
2230	Master's	Available for all surveyed institutions in the remaining years (1974-78, 1980-85)
2240	Bachelor's or Equivalent	

Col #	
1	Total
2	Full Time
3	Part Time

ITEM NO. 2: SCIENTISTS AND ENGINEERS BY EMPLOYMENT STATUS AND SEX

Line #		74-78	79	80-85
2600	Total	A	D	A
2610	Engineers (Total)	A	D	A
2611	Aeronautical & Astronautical	A	D	A
2612	Chemical Engineers	A	D	A
2613	Civil Engineers	A	D	A
2614	Electrical Engineers	A	D	A
2615	Mechanical Engineers	A	D	A
2616	Other Engineers	A	D	A
2620	Physical Scientists (Total)	A	D	A
2621	Astronomers	-	D	A
2622	Chemists	A	D	A
2623	Physicists	A	D	A
2624	Other Physical Scientists	A	D	A
2630	Environmental Scientists (Total)	A	D	A
2631	Atmospheric Scientists	A	D	A
2632	Earth Scientists	A	D	A
2633	Oceanographers	A	D	A
2634	Other Environmental Scientists	-	D	A
2640	Mathematical and Computer Scientists (Total)	A	D	A
2641	Mathematicians	A	D	A
2642	Computer Scientists	A	D	A
2650	Life Scientists (Total)	A	D	A
2651	Agricultural Scientists	A	D	A
2652	Biological Scientists	A	D	A
2653	Medical Scientists	A	D	A
2654	Other Life Scientists	-	D	A
2660	Psychologists (Total)	A	D	A
2670	Social Scientists (Total)	A	D	A
2671	Economists	A	D	A
2672	Political Scientists	A	D	A
2673	Sociologists	A	D	A
2674	Other Social Scientists	A	D	A

Col #				
1	Full Time	A	D	A
2	Part Time	A	D	A
3	Full-Time Men	A	-	A
4	Part-Time Men	-	-	A
5	Full-Time Women	A	-	A
6	Part-Time Women	-	-	A

ITEM NO. 3: SCIENTISTS AND ENGINEERS BY EMPLOYMENT STATUS AND FULL-TIME EQUIVALENCE

Line numbers 2700-2774 match lines 2600-2674 in Item No. 2 above in each survey year indicated.

Col #		
1	Total Headcount	Collected for doctorate institutions only in 1979.
2	Full Time	
3	Part Time	Otherwise available for each line in each year as shown above.
4	Total Full-Time Equivalent (FTE)	Available for total line (2700) only prior to 1978. Available for all lines 2700-2774 for doctorate institutions in 1979. Available for all surveyed institutions for 1980 through 1985.
5	FTE's devoted to R&D	

Appendix D

VALID GRADUATE STUDENT SURVEY DATA CELLS

The lists that follow indicate the valid line and column numbers for each segment of the survey population in each survey year; data cells which were collected but which do not correspond to the current multiyear tape are not covered in this appendix. Availability is indicated by the appropriate symbol: D = doctorate institutions only, M = master's institutions only, A = all (doctorate + master's), "-" = not available (in most cases, not collected). These lists should be used in conjunction with the questionnaire facsimiles shown in appendix I.

These lists are meant to be guides only. There are numerous ways in which a particular institution might deviate from the normal pattern. There are master's institutions which later became doctorate-granting, master's institutions which at one time were considered doctorate-granting, and institutions which could not respond to certain data cells and for whom imputation was not possible. In all cases, the individual status codes on each data cell should be the primary indicator of cell validity.

The data cells have been grouped into sections for ease of presentation. Sections 1 through 3 correspond to questionnaire item #5, sections 4 through 6 correspond to items 6 through 8, and 7 through 10 correspond to items 9 through 12, respectively.

SECTION 1: FULL-TIME GRADUATE STUDENTS BY MECHANISM & SOURCE OF SUPPORT

Line #		75	76-77	78	79-84
1	Fellowships	D	D	-	A
2	Traineeships (1)	-	-	-	A
3	Research Assistantships	D	D	-	A
4	Teaching Assistantships	D	D	-	A
5	Other Types of Support	D	A(2)	-	A
6	Full-Time Total	A	A	D	A
7	Full-Time Women	D	A(3)	-	A
Col #					
1	Dept of Defense	D	D	-	A
2	Natl Institutes of Health	D	D	D	A
3	Other HHS	D	D	D	A
4	Natl Science Foundation	D	D	D	A
5	Other Federal Sources	D	A(3,4)	D(5)	A

6	Institutional Support	D	A(3)	D	A
7	Foreign Sources	D	D	-	A
8	Other U.S. Sources	D	A(3,5)	D(6)	A
9	Self-Support	D	A(3)	D	A
10	Total, All Sources	A(7)	A(7)	D	A(7)

(1) Prior to 1979, fellowships and traineeships were not separately identified. Their sum is stored as line #1 for these years.

(2) Data on mechanisms of support were not requested on the short forms sent to master's-granting institutions in 1976 and 1977. For uniformity of format, total enrollment is shown on line 5, "other types of support." NSF recommends that users refrain from adding these numbers to those shown for doctorate-granting institutions since actual data are not available for master's institutions.

(3) Data were also collected for master's-granting institutions but are no longer maintained in the data base.

(4) For master's-granting institutions, represents the sum of all Federal sources. For doctorate-granting institutions, represents "other Federal sources."

(5) Includes DOD sources.

(6) For doctorate-granting institutions represents only "other U.S. sources." For master's-granting institutions, includes foreign sources as well.

(7) Includes foreign sources.

SECTION 2: FOREIGN FULL-TIME STUDENTS

Line #	Col #		75-76	77	78	79-81	82-84
8	1	Total	D	A	-	A	A(1)

(1) This cell is now identical to line #10, column #7. (See section 5.)

SECTION 3: FIRST-YEAR FULL-TIME GRADUATE STUDENTS BY SEX

Line #		75-77	78	79	80-84
8	First-year Full-Time Students	D	D	A	A
Col #					
2	First-year Total	D	D	A	A
3	First-year Women	D	-	-	A

SECTION 4: PART-TIME GRADUATE STUDENTS

Line #		75	76	77	78	79	80-84
9	Part-Time Students	D(1)	A	A	D	A	A
Col #							
1	Total	D(1)	A	A	D	A	A
2	Women	-	M	A	-	A	A
3	First-year	D	D	D	D	A	-

(1) Also collected for master's-granting institutions but no longer maintained in the data base.

SECTION 5: RACIAL/ETHNIC BACKGROUND

Line #		75-79	80-81	82-84
10	Full-Time Students	-	A	A
11	Part-Time Students	-	A	A
Col #				
1	Black Non-Hispanic	-	A	A
2	American Indian/Alaskan	-	A	A
3	Asian/Pacific Islander	-	A	A
4	Hispanic	-	A	A
5	White Non-Hispanic	-	A	A
6	Other, or Unknown (U.S.Citizens only)	-	A(1)	A
7	Foreign	-	A(1)	A
8	Total	-	A	A

(1) For part-time students, no citizenship data is available prior to 1982; consequently column 6 represents Foreign and Other or Unknown. Column 7 is not available.

SECTION 6: POSTDOCTORATES AND NONFACULTY DOCTORAL RESEARCH STAFF

Line #		75-76	77	78	79-81	82-84
12	Total	D	D	-	A	A
13	Women	-	-	-	A	A
14	With Medical Degrees (MD, DDS, DVM)	-	-	-	-	A
Col #						
	Postdoctorates:					
1	Federal Fellowships	-	-	-	A	A
2	Federal Traineeships (1)	D	D	-	A	A
3	Federal Research Grants (2)	D	D	-	A	A
4	Non-Federal Support	D	D	-	A	A
5	Total, All Sources of Support	D	D	-	A	A
6	Foreign (subset of col 5)	-	D	-	A	A
7	Other Nonfaculty Doctoral Research Staff	-	-	-	A	A
8	Total (columns 5 + 7)	-	-	-	A	A

(1) Traineeships were not separated from fellowships in the period 1973-77; the sum is stored as column 2.

(2) Called "Research Associates" prior to 1979.

SECTION 7: FULL-TIME S/E NONFACULTY DOCTORAL RESEARCH STAFF

Line #		75-82	83	84
15	Total	-	A	A
Col #				
1	Ph.D received before Fall 77 (1)	-	-	A
2	Ph.D received after Fall 77 (1)	-	-	A
3	Total	-	A	A

(1) Data were collected for Ph.D's received before and after fall 1976 in 1983.

SECTION 8: FULL-TIME S/E FACULTY, RANK, AND TENURE STATUS

Line #		75-82	83	84
16	Professor	-	A	A
17	Associate Professor	-	A	A
18	Assistant Professor	-	A	A
19	Other Ranks	-	A	A
20	Nonranked	-	A	A
21	Total	-	A	A

Col #				
1	Tenured	-	A	A
2	In Tenure Track (1)	-	A	A
3	Not in Tenure Track (1)	-	-	A
4	Total	-	A	A

(1) Data regarding total nontenured faculty were collected in 1983; nontenured in tenure track was collected as a subset of total nontenured.

SECTION 9: FULL-TIME S/E FACULTY APPOINTMENTS

Line #		75-82	83	84
22	Total	-	A	A
23	Academic Transfers (Subset of Line 21)	-	A	A

Col #				
1	Tenured	-	A	A
2	Nontenured	-	A	A
3	Total	-	A	A

SECTION 10: FULL-TIME S/E FACULTY DEPARTURES

Line #		75-82	83	84
24	Retirement/Illness/Death	-	A	A

25	Voluntary Resignation for Academic Position	-	A	A
26	Voluntary Resignation for Business/Industry	-	A	A
27	Voluntary Resignation for Other Reasons	-	A	A
28	Failure to Receive Tenure	-	A	A
29	Involuntary Resignation Other Reasons	-	A	A
30	Total	-	A	A

Col #		75-82	83	84
1	Tenured	-	A	A
2	Nontenured	-	A	A
3	Total	-	A	A

Appendix E

DISCIPLINE CODES

The following set of discipline codes is used to categorize S/E departments in the Survey of Graduate Science and Engineering Students and Postdoctorates.

Area and Discipline Code	Discipline Name
ENGINEERING	
101	Aerospace Engineering
102	Agricultural Engineering
103	Biomedical Engineering
104	Chemical Engineering
105	Civil Engineering
106	Electrical Engineering
107	Engineering Science
108	Industrial Engineering/Management Science
109	Mechanical Engineering
110	Metallurgical and Materials Engineering
111	Mining Engineering
112	Nuclear Engineering
113	Petroleum Engineering
114	Engineering, n.e.c.
PHYSICAL SCIENCES	
201	Astronomy
202	Chemistry
203	Physics
204	Physical Sciences, n.e.c.
ENVIRONMENTAL SCIENCES	
301	Atmospheric Sciences
302	Geosciences
303	Oceanography
304	Environmental Sciences, n.e.c.
MATHEMATICAL SCIENCES	
402	Mathematics and Applied Mathematics
403	Statistics
COMPUTER SCIENCES	
401	Computer Science

LIFE SCIENCES:

AGRICULTURAL SCIENCES

501	Agricultural Sciences

BIOLOGICAL SCIENCES

601	Anatomy
602	Biochemistry
603	Biology
604	Biometry and Epidemiology
605	Biophysics
606	Botany
607	Cell Biology
608	Ecology
609	Entomology and Parasitology
610	Genetics
611	Microbiology, Immunology, and Virology
612	Nutrition
613	Pathology
614	Pharmacology
615	Physiology
616	Zoology
617	Biosciences, n.e.c.

HEALTH SCIENCES

701	Anesthesiology
702	Cardiology
703	Cancer Research/Oncology
704	Endocrinology
705	Gastroenterology
706	Hematology
707	Neurology
708	Obstetrics and Gynecology
709	Ophthalmology
710	Otorhinolaryngology
711	Pediatrics
712	Preventive Medicine and Community Health
713	Psychiatry
714	Pulmonary Disease
715	Radiology
716	Surgery
717	Clinical Medicine, n.e.c.
718	Dental Sciences
719	Nursing
720	Pharmaceutical Sciences
721	Veterinary Sciences
722	Health-related, n.e.c.
723	Speech Pathology and Audiology

PSYCHOLOGY

801	Psychology

SOCIAL SCIENCES

901	Agricultural Economics
902	Anthropology
903	Economics (except Agricultural)
904	Geography
905	History and Philosophy of Science
906	Linguistics
907	Political Science
908	Sociology
909	Sociology and Anthropology
910	Social Sciences, n.e.c. (1)

(1) n.e.c. indicates "not elsewhere classified"

Appendix F

AGENCY AND SUBAGENCY CODES

The following agency codes are used for the Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions. The first two digits specify the overall agency, the last two the subagency.

Agency Code	Agency Name	FISCAL YEAR 1973-76	'77	78-79	80-82	83-84
0000	Total, All Agencies	T	T	T	T	T
0100	Department of Agriculture	X	X	X	X	X
0200	Department of Defense	T	T	T	T	T
0201	Army	X	X	X	X	X
0202	Navy	X	X	X	X	X
0203	Air Force	X	X	X	X	X
0204	Other DOD	X	X	X	X	X
0300	Dept of Health & Human Services (HEW prior to FY 1980)	T	T	T	T	T
0301	National Institutes of Health	X	X	X	X	X
0302	Health Resources and Services Administration (1)	X	X	X	X	X
0303	Health Services Administration	X	X	X	X	-
0304	Alcohol, Drug Abuse & Mental Health Administration (HSMA prior to FY 1974)	X	X	X	X	X
0305	Center for Disease Control	X	X	X	X	X
0306	Food and Drug Administration	X	X	X	X	X
0307	Office of Education	X	X	X	-	-
0308	National Institute of Education	X	X	X	-	-
0309	Social and Rehabilitation Service	X	-	-	-	-
0310	Office of Human Development Services	-	-	X	X	X
0311	Health Care Financing Administration	X	X	X	X	X
0312	Social Security Administration	X	X	X	X	X
0313	Office of the Assistant Secretary for Health (2)	-	-	X	X	X
0399	Other HHS	X	X	X	X	X
0400	Department of Energy (ERDA for FY 1975-77; AEC prior to FY 1975)	X	X	X	X	X
0500	National Aeronautics & Space Administration	X	X	X	X	X

0600	National Science Foundation	X	X	X	X	X
0700	Department of the Interior	X	X	X	X	X
0800	Department of Commerce	X	X	X	X	X
1000	Office of Economic Opportunity	X	X	-	-	-
1100	Department of Housing & Urban Development	X	X	X	X	X
1200	Agency for International Development	X	X	X	X	X
1300	Department of Labor	X	X	X	X	X
1400	Department of Transportation	X	X	X	X	X
1500	Environmental Protection Agency	X	X	X	X	X
1700	Nuclear Regulatory Commission	X	X	X	X	X
1900	Department of Education	-	-	-	X	X

NOTE: "-" code not valid for that year; not present on tape

"X" data collected at this level; present on tape

"T" level represents computed sum of reporting subagencies (agencies in the case of the grand total); present on tape

(1) Formerly Health Resources Administration

(2) Formerly Office of Health Policy Research and Statistics

Appendix G

FIELD OF SCIENCE/ENGINEERING CODES

The following set of S/E field codes is used for the Survey of Federal Support to Universities, Colleges, and Nonprofit Institutions.

FOS Code	Field of Science/Engineering	1973-76	FISCAL YEAR '77	'78	79-84
00	Total, All Fields	T	T	T	T
10	Physical Sciences, Total	T	T	T	T
11	Astronomy	X	X	X	X
12	Chemistry	X	X	X	X
13	Physics	X	X	X	X
19	Physical Sciences, n.e.c.	X	X	X	X
20	Mathematical/Computer Sci, Total	T	T	T	T
21	Mathematics	-	X	X	X
22	Computer Sciences	-	X	X	X
29	Mathematical/Computer Sci, n.e.c.	-	-	X	X
30	Environmental Sciences, Total	T	T	T	T
31	Atmospheric	X	X	X	X
32	Geological	X	X	X	X
33	Oceanography	X	X	X	X
39	Environmental Sciences, n.e.c.	X	X	X	X
40	Engineering, Total	T	T	T	T
41	Aeronautical	X	X	X	X
42	Astronautical	X	X	X	X
43	Chemical	X	X	X	X
44	Civil	X	X	X	X
45	Electrical	X	X	X	X
46	Mechanical	X	X	X	X
47	Metallurgy & Materials	X	X	X	X
49	Engineering, n.e.c.	X	X	X	X
50	Life Sciences, Total	T	T	T	T
51	Biological & Agricul, Total	X	X	X	-
51	Biological	-	-	-	X
54	Environmental Biology	-	-	-	X
55	Agricultural	-	-	-	X
56	Medical, Total	T	T	X	X
52	Clinical Medical	X	X	-	-
53	Other Medical	X	X	-	-
59	Life Sciences, n.e.c.	X	X	X	X
60	Psychology, Total	T	T	T	T
61	Biological Aspects	X	X	X	X
62	Social Aspects	X	X	X	X
69	Psychology, n.e.c.	X	X	X	X

70	Social Sciences, Total	T	T	T	T
71	Anthropology	X	X	X	X
72	Economics	X	X	X	X
73	History	X	X	X	X
74	Linguistics	X	X	X	X
75	Political Sciences	X	X	X	X
76	Sociology	X	X	X	X
79	Social Sciences, n.e.c.	X	X	X	X
99	Other Sciences	X	X	X	X

NOTE: "-" code not valid for that year; not present on tape

"X" data collected at this level; present on tape

"T" level represents total of subbreaks; present on tape

Appendix H

CS CLASSIFICATION CODES

The list that follows indicates the institution classification codes used by the Department of Education's Center for Education Statistics.

CS Code	CS Institution Classification
A01	Doctoral-Granting - without medical school
A02	Doctoral-Granting - with medical school
B01	Post Baccalaureate Comprehensive - without medical school
B02	Post Baccalaureate Comprehensive - with medical school
C01	General Baccalaureate
D01	Specialized/Divinity
D02	Specialized/Medical
D03	Specialized/Other Health
D04	Specialized/Engineering
D05	Specialized/Business and Management
D06	Specialized/Fine Arts
D07	Specialized/Law
D08	Specialized/Education
D09	U.S. Service School
D10	Specialized/Other
D11	University and Other Four Year - New
D12	Specialized/Non-Degree Granting
E01	Two-Year Comprehensive
E02	Two-Year Academic
E03	Two-Year Multiprogram Occupational
E04	Two-Year Single Program Occupational
E05	Two-Year - New

Appendix I

SAMPLE SURVEY QUESTIONNAIRE FORMS:

Survey of Scientific and Engineering Expenditures
at Universities and Colleges
(Expenditures Survey)

Survey of Scientific and Engineering Personnel
Employed at Universities and Colleges
(Employment Survey)

Survey of Graduate Science and Engineering
Students and Postdoctorates
(Graduate Student Survey)

EXPENDITURES SURVEY

NSF Form 411 (10-84)

FORM APPROVED
OMB No. 3145-0018
Expiration Date: 1/31/87

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

SURVEY OF SCIENTIFIC AND ENGINEERING EXPENDITURES AT UNIVERSITIES AND COLLEGES, FY 1984

Organizations are requested to complete and return this form to:

NATIONAL SCIENCE FOUNDATION
1800 G Street, N.W., Room L-602
Washington, D.C. 20550
Attn: UNISQ/R&D

This form should be returned by January 7, 1985. Your cooperation in returning the survey questionnaire promptly is very important.

This information is solicited under the authority of the National Science Foundation Act of 1950, as amended. All information you provide will be used for statistical purposes only. Your response is entirely voluntary and your failure to provide some or all of the information will in no way adversely affect your institution.

All financial data requested on this form should be reported in thousands of dollars; for example, an expenditure of $25,342 should be rounded to the nearest thousand dollars and reported as $25.

Where exact data are not available, estimates are acceptable. Your estimates will be better than ours.

Include data for branches and all organizational units of your institution, such as medical schools and agricultural experiment stations. Also include hospitals or clinics owned, operated, or controlled by universities, and integrated operationally with the clinical progams of your medical schools. **Exclude** data for federally funded research and development centers (FFRDC's). A separate questionnaire is included in this package if your institution administers an FFRDC. **If you have any questions please contact Judith Cooksy or Marge Machen (202-634-4674).**

Please correct if name or address has changed

Financial data are requested for your institution's 1984 fiscal year.

Please circle the month in which your institution's fiscal year begins:

1	2	3	4	5	6	7	8	9	10	11	12
JAN											DEC

How many person hours were required to complete this form?

Date Submitted _____

Scope:

This survey collects data on expenditures by universities and colleges for separately budgeted research and development (R&D) in science and engineering. Definitions used are compatible with OMB Circular A-21, revised July 23, 1982. Items 1 and 2 ask for *current fund expenditures* by source of funds and by field of science/engineering. Item 3 collects data on that *portion* of *current fund expenditures* reported in items 1 and 2 that went for the purchase of scientific and engineering research equipment. Item 4 collects data on capital expenditures for facilities and equipment for research, development, and instruction by source of funds and field of science/engineering.

Definitions:

1. ***Research and Development (R&D).*** R&D for purposes of this survey is the same as "organized research" as defined in Section B.1.b. of OMB Circular A-21 (revised). It includes all R&D activities of an institution that are *separately budgeted and accounted for*. R&D includes both "sponsored research" activities (sponsored by Federal and non-Federal agencies and organizations) and "university research" (separately budgeted under an internal application of institutional funds).
   a. *Research* is a systematic study directed toward fuller knowledge or understanding of the subject studied. Research is classified as either basic or applied, according to the objectives of the investigator.
   b. *Development* is systematic use of the knowledge or understanding gained from research, directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes.
2. ***Current fund expenditures.*** Expenditures of funds available for current operations. Such expenditures include all unrestricted gifts and restricted current funds to the extent that such funds were expended for current operating purposes.
3. ***Capital expenditures*** (for facilities and equipment). A capital expenditure as defined in Section J.13 of OMB Circular A-21 (revised) means the cost of the asset including the cost to put it in place. "Equipment" as a capital expenditure means an article of nonexpendable tangible personal property having a useful life of more than two years and an acquisition cost of $500 or more per unit; lower limits may be established, consistent with institutional policy.

PLEASE TYPE OR PRINT NAME OF PERSON SUBMITTING THIS FORM	TITLE	AREA CODE	EXCH.	NO.	EXT.

NAME OF PERSON WHO PREPARED THIS SUBMISSION (if different from above)	TITLE	AREA CODE	EXCH.	NO.	EXT.

Instructions for Items 1 and 2

Separately budgeted research and development (R&D) includes all funds expended for activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the institution. *Include* research equipment purchased under research project awards from "current fund" accounts. Also, *include* research funds subcontracted to outside organizations. *Exclude* training grants, public service grants, demonstration projects, and departmental research expenditures that are not separately budgeted. Also, *exclude* any R&D expenditures in the fields of education, law, humanities, music, the arts, physical education, library science, and all other nonscience fields.

a. *Federal Government*. Report grants and contracts for R&D (including direct and reimbursed indirect costs) by all agencies of the Federal Government.

b. *State and local governments*. Include funds for R&D from State, county, municipal, or other local governments and their agencies. Include here State funds which support R&D at agricultural experiment stations.

c. *Industry*. Include all grants and contracts for R&D from profitmaking organizations, whether engaged in production, distribution, research, service, or other activities. Do not include grants and contracts from nonprofit foundations financed by industry; these should be reported under *All other sources* (line 1175).

d. *Institutional funds*. Report funds, including indirect costs, which your institution spent for R&D activities from the following sources: (1) General-purpose State or local government appropriations; (2) general-purpose grants from industry, foundations, or other outside sources; (3) tuition and fees; (4) endowment income. In addition, estimate your institution's contribution to unreimbursed indirect costs incurred in association with R&D projects financed by outside organizations, and mandatory cost sharing on Federal and other grants. To estimate unreimbursed indirect costs, many institutions use a university-wide negotiated indirect cost rate multiplied by the base (e.g., direct salaries and wages, etc.) minus actual indirect cost recoveries. If your institution now separately budgets what was previously classified as departmental research, these data should be included in line 1161.

e. *All other sources*. Include grants for R&D from nonprofit foundations and voluntary health agencies as well as from all other sources not elsewhere classified. Funds from foundations which are affiliated with, or granted solely to your institution, should be included under line 1160, Institutional funds. Funds for R&D received from a health agency that is a unit of a State or local government should be reported under State and local governments (line 1125). Also include gifts from individuals that are restricted by the donor to research.

ITEM 1. CURRENT FUND EXPENDITURES FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT IN THE SCIENCES AND ENGINEERING, BY SOURCE OF FUNDS. FY 1984 (Include indirect costs)

Source of funds		(1) Total (Dollars in thousands)	(2) Basic research (Percent of column 1)
a. Federal Government	1110	$	_____ %
*b. State and local governments	1125		**Basic research** is directed toward an increase of knowledge; it is research where the primary aim of the **investigator** is a fuller knowledge or understanding of the subject under study rather than a specific application thereof.
c. Industry	1150		
d. Institutional funds	1160		
(1) Separately budgeted	1161		
(2) Underrecovery of indirect costs and cost sharing	1162		
*e. All other sources	1175		
f. TOTAL (sum of a through e)	1100	$	_____ %

*Combined data cell (See instructions for b and e).

CONFIDENTIALITY

Information received from individual institutions in lines 1161 and 1162, or estimates for basic research expenditures, will not be published or released; only aggregate totals will appear in publications.

Total R&D expenditures reported in line 1100, column (1) and line 1400, column (1) should be the same.

Federally financed R&D expenditures reported in line 1110, column (1) and line 1400, column (2) should be the same.

ITEM 2. CURRENT FUND EXPENDITURES (TOTAL AND FEDERALLY FINANCED) FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT, BY FIELD OF SCIENCE/ENGINEERING: FY 1984

(Include indirect costs)*

Field of science/engineering		(Dollars in thousands)	
		(1) Total	(2) Federal
a. ENGINEERING (TOTAL)	1410		
(1) Aeronautical & astronautical	1411		
(2) Chemical	1412		
(3) Civil	1413		
(4) Electrical	1414		
(5) Mechanical	1415		
(6) Other	1416		
b. PHYSICAL SCIENCES (TOTAL)	1420		
(1) Astronomy	1421		
(2) Chemistry	1422		
(3) Physics	1423		
(4) Other	1424		
c. ENVIRONMENTAL SCIENCES (TOTAL)	1430		
(1) Atmospheric	1431		
(2) Earth sciences	1432		
(3) Oceanography	1433		
(4) Other	1434		
d. MATHEMATICAL AND COMPUTER SCIENCES (TOTAL)	1440		
(1) Mathematics	1441		
(2) Computer sciences	1442		
e. LIFE SCIENCES (TOTAL)	1450		
(1) Agricultural	1451		
(2) Biological	1452		
(3) Medical	1453		
(4) Other	1454		
f. PSYCHOLOGY (TOTAL)	1460		
g. SOCIAL SCIENCES (TOTAL)	1470		
(1) Economics	1471		
(2) Political science	1472		
(3) Sociology	1473		
(4) Other	1474		
h. OTHER SCIENCES, not elsewhere classified (TOTAL)	1480		
i. TOTAL (sum of a through h)	1400		

*PLEASE EXCLUDE from your response any R&D expenditures in the fields of education, law, humanities, music, the arts, physical education, library science, and all other nonscience fields.

ITEM 3. CURRENT FUND EXPENDITURES FOR RESEARCH EQUIPMENT (TOTAL AND FEDERALLY FINANCED) FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT, BY FIELD OF SCIENCE/ENGINEERING: FY 1984*

(See page 5 for instructions.)

Field of science/engineering		(Dollars in thousands) (1) Total	(2) Federal
a. ENGINEERING (TOTAL)	1810		
(1) Aeronautical & astronautical	1811		
(2) Chemical	1812		
(3) Civil	1813		
(4) Electrical	1814		
(5) Mechanical	1815		
(6) Other	1816		
b. PHYSICAL SCIENCES (TOTAL)	1820		
(1) Astronomy	1821		
(2) Chemistry	1822		
(3) Physics	1823		
(4) Other	1824		
c. ENVIRONMENTAL SCIENCES (TOTAL)	1830		
(1) Atmospheric	1831		
(2) Earth sciences	1832		
(3) Oceanography	1833		
(4) Other	1834		
d. MATHEMATICAL AND COMPUTER SCIENCES (TOTAL)	1840		
(1) Mathematics	1841		
(2) Computer sciences	1842		
e. LIFE SCIENCES (TOTAL)	1850		
(1) Agricultural	1851		
(2) Biological	1852		
(3) Medical	1853		
(4) Other	1854		
f. PSYCHOLOGY (TOTAL)	1860		
g. SOCIAL SCIENCES (TOTAL)	1870		
(1) Economics	1871		
(2) Political science	1872		
(3) Sociology	1873		
(4) Other	1874		
h. OTHER SCIENCES, not elsewhere classified (TOTAL)	1880		
i. TOTAL (sum of a through h)	1800		

*Current fund expenditures in each field for scientific research equipment should be a subset of the "Total" and "Federal" column reported in item 2.

Item 3 Instructions

Please report that **portion** of current fund **expenditures** reported in items 1 and 2 that went for the purchase of research equipment. This includes all research equipment purchased under sponsored research project awards from current fund accounts.

NOTE: These research equipment expenditures are **not** to be included under capital expenditures reported in item 4.

For column (1) report current fund expenditures for R&D from all sources: Federal Government, State, county, municipal, or other governments and their agencies (including State funds supporting R&D at agricultural experiment stations); industry; institutional funds; and private foundations and voluntary health agencies, individuals, and associations.

For column (2) include funds from grants and contracts for R&D sponsored by agencies of the Federal Government.

Item 4 Instructions

Please report expenditures for facilities that were in process or completed during FY 1984.

Capital expenditures for facilities and equipment **include** the following: (a) Fixed equipment such as built-in equipment and furnishings; (b) movable scientific equipment such as oscilloscopes and pulse-height analyzers; (c) movable furnishings such as desks; (d) architect's fees, site work, extension of utilities, and the building costs of service functions such as integral cafeterias and bookstores of a facility; (e) facilities constructed to house separate components such as medical schools and teaching hospitals; and (f) special separate facilities used to house scientific apparatus such as accelerators, oceanographic vessels, and computers.

Expenditures for administration buildings, steam plants, residence halls, and other such facilities should be **excluded** unless used principally for research, development, or instruction in the sciences and engineering. Land costs should be **excluded.**

REMINDER: Exclude research equipment purchased under research project awards from current fund accounts that are reported under items 1, 2, and 3.

ITEM 4. CAPITAL EXPENDITURES FOR FACILITIES AND EQUIPMENT FOR RESEARCH, DEVELOPMENT, AND INSTRUCTION, BY FIELD OF SCIENCE/ENGINEERING AND SOURCE OF FUNDS: FY 1984

Field of science/engineering		(Dollars in thousands)		
		Total (1)	Federal (2)	All other sources (3)
a. Engineering	1710	$	$	$
b. Physical sciences	1720			
c. Environmental sciences	1730			
d. Mathematical and computer sciences	1740			
e. Life sciences	1750			
f. Psychology	1760			
g. Social sciences	1770			
h. Other sciences, n.e.c.	1780			
i. Total (sum of a through h)	1700	$	$	$

ILLUSTRATIVE DISCIPLINES[1]

a. Engineering	
(1) Aeronautical & astronautical	Aerodynamics, aerospace, space technology
(2) Chemical	Petroleum, petroleum refining process
(3) Civil	Architectural, hydraulic, hydrologic, sanitary and environmental, structural transportation
(4) Electrical	Communication, electronic, power
(5) Mechanical	Engineering mechanics
(6) Other	Agricultural, ceramic, industrial and management, marine, metallurgical and materials, mining, nuclear, ocean engineering systems, textile, welding
b. Physical sciences	
(1) Astronomy	Astrophysics, optical and radio, x-ray, gamma-ray, neutrino
(2) Chemistry	Inorganic, organo-metallic, organic, physical, analytical, pharmaceutical, polymer sciences (exclude biochemistry)
(3) Physics	Acoustics, atomic and molecular, condensed matter, elementary particles, nuclear structure, optics, plasma
(4) Other	Used for multidisciplinary projects within physical sciences and for disciplines not requested separately
c. Environmental sciences	
(1) Atmospheric	Aeronomy, solar, weather modification, extraterrestrial atmospheres, meteorology
(2) Earth sciences	Engineering geophysics, general geology, geodesy and gravity, geomagnetism, hydrology, inorganic geochemistry, isotopic geochemistry, organic geochemistry, lab geophysics, paleomagnetism, paleontology, physical geography and cartography, seismology
(3) Oceanography	Biological oceanography, chemical oceanography, geological oceanography, physical oceanography, marine geophysics
(4) Other	Used for multidisciplinary projects within environmental sciences
d. Mathematical and computer sciences	
(1) Mathematics	Algebra, analysis, applied mathematics, foundations and logic, geometry, numerical analysis, statistics, topology
(2) Computer sciences	Design, development, and application of computer capabilities to data storage and manipulation, information science
e. Life sciences	
(1) Agricultural	Agricultural chemistry, agronomy, animal science, conservation, dairy science, range science, wildlife
(2) Biological	Anatomy, biochemistry, biophysics, biogeography, ecology, embryology, entomology, genetics, immunology, microbiology, nutrition, parasitology, pathology, pharmacology, physical anthropology, physiology, plant science, botany, zoology, veterinary biology
(3) Medical	Anesthesiology, cardiology, endocrinology, gastroenterology, hematology, neurology, obstetrics, ophthalmology, preventive medicine and community health, psychiatry, radiology, surgery, veterinary medicine,[2] dentistry, pharmacy
(4) Other	Used for multidisciplinary projects within life sciences
f. Psychology	Animal behavior, clinical, educational, experimental, human development and personality, social
g. Social sciences	
(1) Economics	Econometrics, international, industrial, labor, agricultural, public finance and fiscal policy
(2) Political science	Regional studies, comparative government, international relations, legal systems, political theory, public administration
(3) Sociology	Comparative and historical, complex organizations, culture and social structure, demography, group interactions, social problems and welfare, theory
(4) Other	History of science, cultural anthropology, lingistics, socioeconomic geography
h. Other sciences, n.e.c.	To be used when the multidisciplinary and interdisciplinary aspects make the classification under one primary field impossible

[1]Also, see enclosed "Crosswalk" between NSF field of science/engineering codes and the NCES Classification of Instructional Programs (NCES 81-323).

[2]Institutions with schools of veterinary medicine should distribute R&D expenditures among the appropriate disciplines (agricultural, biological, and medical) rather than only in medical sciences.

EMPLOYMENT SURVEY

NSF FORM 724A (11-84)

OMB No. 3145-0074
Exp. Date: 12/31/85

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

SURVEY OF SCIENTIFIC AND ENGINEERING PERSONNEL EMPLOYED AT UNIVERSITIES AND COLLEGES, JANUARY 1985

Organizations are requested to complete and return this form to:

NATIONAL SCIENCE FOUNDATION
1800 G Street, N.W., Room L-602
Washington, D.C. 20550—Attn: UNISG

This information is solicited under the authority of Section 3 (a) (6) of the National Science Foundation Act of 1950, as amended (42 U.S. Code 1862 (a) (6)). Your response is entirely voluntary and your failure to provide some or all of the information will in no way adversely affect your institution.

Please correct if name or address has changed.

This survey requests scientific and engineering (S/E) employment data according to institutional recordkeeping conventions. **The completed 1985 questionnaire should be returned by March 15, 1985.** Your prompt cooperation will be appreciated. If you determine, however, that you cannot respond by March 15, please notify NSF and request an extension of time.

Please read the enclosed instructions before completing this form. If you have any questions, contact Ms. Judith Coakley or Ms. Esther Gist (202-634-4673). Please complete all columns; estimates by academic officials will be better than NSF estimates.

All entries should be in whole numbers; please do not enter decimals or fractions, except in item 3, columns 2 and 3, where two decimal places are optional.

SURVEY POPULATION

Include data for ALL ORGANIZATIONAL UNITS OF YOUR INSTITUTION THAT EMPLOY SCIENTISTS AND ENGINEERS, such as regional campuses, computer centers, medical schools, agricultural experiment stations, and associated research units. Also include any hospital or clinic owned, operated, or controlled by your university and integrated operationally with the clinical programs of your medical schools.

Federally Funded Research and Development Centers (FFRDC's)

Separate forms have been mailed directly to all FFRDC's administered by academic institutions. A list of these centers appears on page 3 of the Instructions and Definitions.

INSTITUTIONAL CLASSIFICATION

Highest degree granted in the sciences or engineering during 1984-85	Check one	One example of a science or engineering field in which highest degree was awarded	Check primary administrative control of your institution	
Doctor's degree, e.g., Ph.D., D. Eng., or D.E.S.	☐	_____	Federal	☐
First-professional degree, e.g., M.D., D.D.S., D.V.M., etc.	☐	_____	State	☐
Master's degree	☐	_____		
Bachelor's degree	☐	_____	Local	☐
Associate or other 2-year award	☐	_____		
No degrees granted in the sciences or engineering	☐	_____	Private	☐

Item 1.	Total number of scientists and engineers by highest earned degree and employment status: January 1985			
HIGHEST EARNED DEGREE		HEADCOUNTS		
		TOTAL (1)	FULL TIME (2)	PART TIME (3)
a. Doctor's degree, e.g., Ph. D., D. Eng., or D.E.S.	2210			
b. First-professional degree, e.g., M.D., D.D.S., D.V.M., etc.	2220			
c. Master's degree	2230			
d. Bachelor's degree or the equivalent	2240			
e. Total (sum of a through d)	2200			

NOTE: To ensure proper data comparability between item 1, line 2200, and items 2 and 3:

a) Line 2200, column 1 should equal item 3, line 2700, column 1;
b) Line 2200, column 2 should equal item 2, line 2600, column 1;
c) Line 2200, column 3 should equal item 2, line 2600, column 2.

Item 2.	Total number of scientists and engineers by discipline, sex, and employment status: January 1985						
	S/E DISCIPLINES[1]	HEADCOUNTS					
		TOTAL		MEN		WOMEN	
		Full time	Part time	Full time	Part time	Full time	Part time
		(1)	(2)	(3)	(4)	(5)	(6)
	a. Engineers (total) 2610						
	(1) Aeronautical and astronautical engineers .. 2611						
	(2) Chemical engineers 2612						
	(3) Civil engineers 2613						
	(4) Electrical engineers 2614						
	(5) Mechanical engineers 2615						
	(6) Other engineers 2616						
	b. Physical scientists (total) 2620						
	(1) Astronomers 2621						
	(2) Chemists 2622						
	(3) Physicists 2623						
	(4) Other physical scientists . 2624						
	c. Environ. scientists (total) 2630						
	(1) Atmospheric scientists ... 2631						
	(2) Earth scientists 2632						
	(3) Oceanographers 2633						
	(4) Other environ. sci. 2634						
	d. Mathematical and computer scientists (total) 2640						
	(1) Mathematicians (exclude computer scientists) 2641						
	(2) Computer scientists (exclude programmers) .. 2642						
	e. Life scientists (total) 2650						
	(1) Agricultural scientists 2651						
	(2) Biological scientists 2652						
	(3) Medical scientists (see instructions, p. 4) 2653						
	(4) Other life scientists 2654						
	f. Psychologists (total) 2660						
	g. Social scientists (total) (exclude historians) 2670						
	(1) Economists 2671						
	(2) Political scientists 2672						
	(3) Sociologists 2673						
	(4) Other social scientists 2674						
	h. Total (sum of a thru g) 2600						

PLEASE EXCLUDE from your response any employees in the fields of education, law, humanities, music, the arts, physical education, library science, and all other nonscience fields.

[1]See enclosed Crosswalk between NSF's S/E disciplines and the codes in the NCES Classification of Instructional Programs.

Item 3.	Total number of scientists and engineers by discipline, estimated full-time equivalents, and R&D activity: January 1985				
	S/E Disciplines	Total headcounts[1]	Estimated full-time-equivalents (FTE's)		
			Total FTE's[2]	FTE's devoted to separately budgeted R&D[3]	
				Number	Percent (optional)[4]
	a. Engineers (total) 2710				%
	(1) Aeronautical and astronautical engineers 2711				%
	(2) Chemical engineers 2712				%
	(3) Civil engineers 2713				%
	(4) Electrical engineers 2714				%
	(5) Mechanical engineers 2715				%
	(6) Other engineers 2716				%
	b. Physical scientists (total) 2720				%
	(1) Astronomers 2721				%
	(2) Chemists 2722				%
	(3) Physicists 2723				%
	(4) Other physical scientists 2724				%
	c. Environmental scientists (total) 2730				%
	(1) Atmospheric scientists 2731				%
	(2) Earth scientists 2732				%
	(3) Oceanographers 2733				%
	(4) Other environmental scientists 2734				%
	d. Mathematical and computer scientists (total) 2740				%
	(1) Mathematicians (exclude computer scientists) 2741				%
	(2) Computer scientists (exclude programmers) 2742				%
	e. Life scientists (total) 2750				%
	(1) Agricultural scientists 2751				%
	(2) Biological scientists 2752				%
	(3) Medical scientists (see instructions, p. 4) 2753				%
	(4) Other life scientists 2754				%
	f. Psychologists (total) 2760				%
	g. Social scientists (total) (exclude historians) 2770				%
	(1) Economists 2771				%
	(2) Political scientists 2772				%
	(3) Sociologists 2773				%
	(4) Other social scientists 2774				%
	h. Total (sum of a thru g) 2700				%

[1]Line 2700, column 1, should equal item 1, line 2200, column 1.

[2]Include all activities, e.g., teaching, separately budgeted R&D, etc., of all individuals reported in column 1.

[3]See section 8 in Instructions for definition of "separately budgeted R&D expenditures."

[4]Column 4 has been provided for the convenience of those institutions that estimate the number (column 3) of FTE's devoted to separately budgeted R&D activities by use of a percentage (column 4) in each discipline.

CHECK LIST

( ) 1. Are all entries rounded to whole numbers? Please do not enter fractions or decimals, except in columns 2 and 3 where two decimal places are optional.

( ) 2. Do the data add to subtotals?

( ) 3. Are all columns completed? YOUR estimates will be better than OURS. An explanation of estimates may be noted on a separate sheet or in the REMARKS.

( ) 4. Are all branches and components such as medical school, computer center, agricultural experiment station, and associated research units included?

( ) 5. Have you INCLUDED all postdoctorates?

( ) 6. Have you EXCLUDED graduate students?

1984-85 DATA CHECK

(For your convenience)

Please compare your January 1984 survey response with your survey response for January 1985, particularly for the totals. Please explain below or on a separate sheet any significant changes. Where possible, indicate any required adjustments in data reported in previous years.

	1984	1985
Total full-time scientists and engineers	Line 2600, column 1.	Line 2600, column 1.
Total part-time scientists and engineers	Line 2600, column 2.	Line 2600, column 2.
Total FTE's	Line 2700, column 2.	Line 2700, column 2.
Total FTE's in R&D	Line 2700, column 3.	Line 2700, column 3.

CONFIDENTIALITY

The National Science Foundation recognizes that its ability to gather much of the enclosed information would be severely impaired if it could not be held in confidence. Please indicate below the number of any items that you would not supply unless assured that the source is held confidential. The Foundation will hold in confidence such information to the extent permitted by law.

ITEM:

REMARKS

What methods and source records were used for estimating separately budgeted R&D effort?

Please indicate problems encountered in estimating R&D-related activity.

Please circle the month that your institutional data represent to reflect academic year 1984-85 employment.

1 Jan 2 3 4 5 6 7 8 9 10 11 12 Dec

Are there any significant changes in data reported in previous years?

How many person-hours were required to complete this form? ☐

PLEASE TYPE OR PRINT NAME OF PERSON SUBMITTING THIS FORM	TITLE	AREA CODE	EXCH	NO.	EXT.
NAME OF PERSON WHO PREPARED THIS SUBMISSION (If different from above)	TITLE	AREA CODE	EXCH	NO.	EXT.

NAME OF INSTITUTION	DATE	ADDRESS (number, street, city, State, ZIP code)

GRADUATE STUDENT SURVEY

INSTRUCTIONS FOR SURVEY OF GRADUATE SCIENCE AND ENGINEERING STUDENTS AND POSTDOCTORATES, FALL 1984

General Definitions

A *graduate science/engineering (S/E) student* is defined as a student enrolled for credit in an advanced-degree program leading to either a master's or Ph.D. degree in fall 1984. M.D., D.V.M., or D.D.S. candidates, interns, and residents should *not* be reported *unless* they are concurrently working for a master's or Ph.D. in a science or engineering field or are enrolled in a joint M.D./Ph.D. program. Individuals who already hold an M.D., D.V.M., or D.D.S., master's or Ph.D. degree but who are working on *another master's or Ph.D. degree are to be counted as graduate students, either full or part time. Do not* report such individuals as postdoctorates in items 8 and 9 or as faculty members in items 10-12.

Graduate S/E students performing thesis or dissertation research away from the campus at Government and contractor-owned facilities in the United States are to be included as long as they are enrolled for credit in an advanced-degree program. Students enrolled at a branch or extension center in a foreign country are to be *excluded*.

A graduate S/E student, whether full- or part-time, should be reported in only one department. If any students are in interdisciplinary programs, please be sure that they are counted only once by their "home" department. If a graduate student is enrolled in an inter-institutional program, please report the student only if the degree will be granted by your institution. Please report in terms of headcounts, *not* in full-time-equivalent (FTE) terms. Please do not report decimals or fractions. If data are unavailable or unknown, write "unavailable" or "unknown" in the blank. "N/A" means "not applicable" on this form.

Item Instructions and Definitions

HIGHEST DEGREE GRANTED, item 4: Check the item which refers to the *highest degree* granted by this science/engineering department in the academic year 1984/85. If your department has never granted a graduate degree, but is a department of clinical medicine with or without postdoctorates, check (3).

FULL-TIME GRADUATE S/E STUDENTS, item 5: A full-time graduate student is defined as a student enrolled for credit in an advanced-degree program (not a regular staff member or a postdoctorate) who is engaged full time in training activities in his/her field of science/engineering; these activities may embrace any appropriate combination of study, teaching, and research, depending on *your institution's own policy*. If your department has no full-time graduate students, write "None" in item 5 and move to item 6.

MECHANISMS OF SUPPORT, item 5, lines (1)-(5): Report each full-time graduate S/E student *only once* according to the source of the largest amount of support received in the fall of 1984. Students receiving *equal* amounts of support from two or more sources should be reported only once, under one of the sources. Students who receive *fellowships* or *traineeships* should be reported on line (1) or (2) respectively, if either of these mechanisms constitute the largest source of their support. The Federal Interagency Committee on Education (FICE) differentiates between the two *fellowship and traineeship* stipends as follows: 1) A fellowship is an award made directly to or on behalf of a student selected in a competition, usually national in scope, to enable him to pursue post-baccalaureate training, and 2) a traineeship is an educational award to a student selected by his university. Except for the student selection process, the terms and conditions of the two types of awards are generally identical. A student receiving his/her main support from an assistantship should be classified as a research assistant on line (3) or as a teaching assistant on line (4), depending on how he/she spends the majority of his/her time, e.g., a graduate assistant devoting most of his/her time to teaching should be classified as a graduate teaching assistant. All other full-time graduate students, **including members of the armed forces whose tuition is paid by the Department of Defense, should be reported on line (5).**

STUDENTS RECEIVING FINANCIAL ASSISTANCE, item 5, columns (A) through (H): Report the number of full-time graduate S/E students in the appropriate column according to the source of the largest portion of their support. To determine the source, consider only tuition and other academic expenses. If a graduate student receives equal support from more than one source, report student under only one source.

FEDERAL SOURCES, columns (A) through (E): Report the number of full-time graduate S/E students in the appropriate column where they receive the largest portion of their support. Full-time graduate S/E students receiving the largest portion of their support from Federal Government *loans* should be reported as *self-supported*, column (I).

Department of Defense (DOD), column (A): Report full-time graduate S/E students receiving support from the Department of the Army, Navy, or Air Force. Students receiving their main support from the Veterans Administration under the G.I. Bill should be reported under column (E) "Other Federal Sources"; if this form of support does not constitute his/her *main* source, the student should be counted in the appropriate column representing that source.

Department of Health and Human Services (HHS), columns (B) and (C): Report full-time graduate students receiving support from the institutes or divisions of the **National Institutes of Health (NIH)** under column (B); support from all other components of HHS should be reported under column (C), as indicated below:

National Institutes of Health, report in column (B):
- Division of Research Resources
- National Cancer Institute
- National Eye Institute
- National Heart, Lung, and Blood Institute
- National Institute on Aging
- National Institute of Allergy and Infectious Diseases
- National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases
- National Institute of Child Health and Human Development
- National Institute of Dental Research
- National Institute of Environmental Health Sciences
- National Institute of General Medical Sciences
- National Institute of Neurological and Communicative Disorders and Stroke
- National Library of Medicine

Other HHS, report in column (C):
- Alcohol, Drug Abuse, and Mental Health Administration (including National Institute of Mental Health)
- Center for Disease Control
- Food and Drug Administration
- Health Resources Administration
- Health Services Administration
- Office of Human Development

Other Federal sources, column (E): Report the number of full-time graduate S/E students receiving support from all other Federal agencies, including the Department of Education.

NON-FEDERAL SOURCES, columns (F) through (H):

Institutional support, column (F): Report full-time graduate S/E students receiving support from your own institution, including those supported through tuition waivers, and by State and local governments. Students supported by funds given to a university by the Federal Government, such as training grant funds, should be reported under the appropriate Federal agency and NOT reported as *institutional support*.

Foreign sources, column (G): Include support from any non-U.S. source.

Other U.S. sources, column (H): Include support from nonprofit institutions, private industry, and all other U.S. sources.

SELF-SUPPORTED STUDENTS, column (I): Include full-time graduate S/E students whose main source of support is derived from loans from any source and from personal or family financial contributions. Full-time graduate S/E students receiving the largest portion of their support from Federal loans should be reported here. Note that these students should be included in the total, column (J). Foreign *self-supported* students are to be reported here, also.

Women, line (7): Report all women S/E students by their source of main support. Please note that in each column, data on line (7) should not exceed the total on line (6).

First-year students, lines (8) and (9): A first-year student is defined as one who will have completed *less than a full year* of graduate study as of the beginning of the fall term in 1984 *in the S/E program in which he/she is enrolled for a degree*. All other graduate S/E students should be considered beyond their first year.

PART-TIME GRADUATE S/E STUDENTS, item 6: A part-time graduate student is defined as a student who is enrolled in an advanced-degree program who is NOT pursuing graduate work full time as defined in item 5. Report the *total* number of part-time graduate students on line (1); if a department has no part-time graduate students, enter "None" and move to item 7.

CITIZENSHIP AND RACIAL/ETHNIC BACKGROUND, item 7: Racial/ethnic designations as used in this survey do not denote scientific definitions of anthropological origins; a graduate student may thus be included in the group to which he/she appears to belong, identifies with, or is regarded in the community as belonging. No person should be counted in more than one racial/ethnic group, however, and only those with U.S. citizenship should be reported in columns (A) through (F). Non-U.S. citizens, whether holding temporary or permanent visas, should be reported as FOREIGN in column G.

On line (1), report the total number of full-time S/E graduate students under the appropriate racial/ethnic category. The total for each line should equal the sum of columns (A) through (G). The total for full-time enrollment shown in item 7 should match the total shown in item 5; similarly, the part-time total shown in item 7 should equal the total in item 6.

The following racial/ethnic designations are those defined by the Bureau of Census:

U.S. CITIZENS: columns (A) through (E):

Black, non-Hispanic, column (A): Report persons having origins in any of the black racial groups (except those of Hispanic origin).

American Indian or Alaskan Native, column (B): Report persons having origins in any of the original peoples of North America.

Asian or Pacific Islander, column (C): Report persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. These areas include China, Japan, Korea, the Philippine Islands, and Samoa.

Hispanic, column (D): Report persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

White, non-Hispanic, column (E): Report persons having origins in any of the original peoples of Europe, North Africa, or the Middle East, except those of Hispanic origin.

OTHER AND UNKNOWN, column (F): If department records are not complete as to racial/ethnic origin of some graduate students, please report in column (F) those students with U.S. citizenship whose origins are not listed in item 7, as well as those whose origins are unknown.

FOREIGN, column (G): Please report all foreign students, whether nonresident alien or holding a permanent visa, in column (G). A *foreign* graduate student is defined as an individual who has not attained U.S. citizenship. Do not include native residents of a U.S. possession, such as American Samoa. Applicants for U.S. citizenship are to be considered as foreign until the date their citizenship becomes effective.

POSTDOCTORATES AND NON-FACULTY DOCTORAL RESEARCH STAFF, items 8 and 9: Include as postdoctorates those individuals with science or engineering Ph.D.'s, M.D.'s, D.D.S.'s, or D.V.M.'s (including foreign degrees that are equivalent to U.S. doctorates) who devote *their primary effort to research activities* or study in the department under temporary appointments carrying no academic rank. Such appointments are generally for a *specific time period*. They may contribute to the academic program through seminars, lectures, or working with graduate students. Their postdoctoral activities provide additional training for them. Exclude clinical fellows and those with appointments in residency training programs in medical and health professions, unless *research training* under the supervision of a *senior mentor* is the *primary purpose* of the appointment.

On line (1) of item 8, under columns (A) and (B), enter the number of fellows and trainees receiving support under Federal fellowships and/or training grants. Under column (C) enter the number of postdoctorates who are receiving federally supported research grants. Those remaining postdoctoral appointees receiving non-Federal support should be entered under column (D). Of the *total* in column (E), enter in column (F) the number of postdoctorates who are foreign.

Under **other non-faculty doctoral research staff**, column (G), report all doctoral scientists and engineers who are principally involved in research activities but who are considered *neither* postdoctoral appointees nor members of the *regular* faculty. In column (H), report the total of columns (E) and (G).

On line (2), report the number of women in each category. On line (3) report those postdoctorates and non-faculty doctoral research staff who hold first professional medical degrees (M.D., D.D.S., D.V.M., etc.). Please note that in each column, data on lines (2) and (3) should not exceed the total on line (1).

In item 9, include persons employed by the department in fall 1984 in a professional capacity specifically for research activities, who hold S/E doctorates on the date this survey form is filled out, who do not have a faculty appointment, and who are not postdoctorates. (The total in column C should be the same as reported in item (8), column (G), line (1).)

FULL-TIME S/E FACULTY, items 10 through 12: Include all full-time S/E faculty in your department regardless of whether they instruct graduate or undergraduate students. Please note that while items 5 through 10 request data for fall 1984, items 11 and 12 request data on faculty appointments and departures during the 1983/84 academic year. Information on appointments and departures is requested for the *preceding* academic year to elicit exact data rather than *anticipated* appointments and departures for the current academic year.

In item 10, RANK AND TENURE STATUS, include all ranks from instructor to professor. Include full-time members of your department who are on sabbatical leave away from your institution. Persons with joint appointments who work part of their time in another department should be treated as follows: Those working more than one-half their time in this department should be included here; those working less than one-half time in this department should be included in the other department; if they work exactly half time in each, please consult with the chairperson of the other department as to which one will include the appointee. Please DO NOT include the following as full-time faculty: Visiting professors, postdoctorates, research associates, graduate assistants, or others who are not REGULAR full-time S/E faculty in this department. The data reported in column (B), referring to TENURE-TRACK staff,should include non-tenured positions in which incumbents are eligible for tenure consideration. Generic examples of possible NON-TENURE TRACK positions include: Adjunct faculty, assistant instructors, lecturers, residents, specialists, etc.

In item 11, NEW FULL-TIME S/E FACULTY APPOINTMENTS, include all full-time S/E faculty that your department appointed for service to begin during the academic year 1983/84. Do not include information on re-appointments. How many of these new appointees held full-time faculty or staff appointments in another academic institution immediately prior to their joining your department? What tenure status were they given in your department at the time of their appointments?

In item 12, include all members of this department who held full-time S/E faculty appointments in September 1983 and left the department between September 1, 1983, and August 31, 1984, for one of the reasons listed. *(Count each person only once; in case of multiple reasons, choose the one in your opinion that was most important.)*

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UPON COMPLETING THIS FORM, PLEASE RETURN IT TO YOUR SURVEY COORDINATOR.

NSF Form 812, Aug. 84

NATIONAL SCIENCE FOUNDATION and NATIONAL INSTITUTES OF HEALTH

Survey of Graduate Science and Engineering Students and Postdoctorates, Fall 1984

Form Approved
OMB No. 3145-0062
Appr. Exp. 12/31/86

DEPARTMENTAL OR PROGRAM DATA SHEET

Before filling out, please read the instructions. Upon completion, return form to your survey coordinator.

1. Name and address of institution: _____

_____

2. Name of science or engineering department (or program) covered by this data sheet: _____

3. Person in department (or program) preparing this form:

Name: _____

Title: _____ Phone: ( )

4. Highest degree granted by department or program 1984/85. (CHECK ONE ONLY) Doctorate _____(1) Master's _____(2) No graduate degree offered _____(3)

(LEAVE BLANK)

Response code ..... ☐

Institution and department code

If your department or program does not enroll graduate students, please move to item 8 below. For identification of S/E fields classification, see your coordinator's NSF/NCES "Crosswalk." If data are unavailable or unknown, write "unavailable" or "unknown" in the blank. "N/A" means "not applicable" on this form. Data are to be reported on a "headcount" basis; please DO NOT USE DECIMALS OR FRACTIONS in items 5 through 12.

5. Number of **FULL-TIME GRADUATE S/E STUDENTS** enrolled for advanced degrees (master's and doctorate) in fall 1984

MECHANISMS OF SUPPORT		STUDENTS RECEIVING FINANCIAL ASSISTANCE								SELF-SUPPORTED STUDENTS (including loans and family sources) (I)	TOTAL FOR ALL SOURCES (Sum of (A) thru (I)) (J)
		FEDERAL SOURCES (excluding loans)					NON-FEDERAL SOURCES				
		Department of Defense (A)	HHS: National Institutes of Health (B)	HHS: Other HHS (C)	National Science Foundation (D)	Other Federal sources[1] (E)	Institutional support[2] (F)	Foreign sources (G)	Other U.S. sources[3] (H)		
Graduate Fellowships	(1)										
Graduate Traineeships	(2)										
Graduate Research Assistantships	(3)										
Graduate Teaching Assistantships	(4)										
Other Types of Support	(5)										
FULL-TIME TOTAL	(6)										
For each total on line (6) how many are WOMEN?	(7)										

FIRST-YEAR STUDENTS	(8)	Of the full-time graduate students on line (6), column (J), how many are FIRST-YEAR students?	
FIRST-YEAR WOMEN STUDENTS	(9)	Of the full-time FIRST-YEAR graduate students on line (8), how many are WOMEN?	

[1] Please list agencies and number supported by each under "Comments," or attach a separate sheet.

[2] Include support from this university and State and local governments.

[3] Include support from nonprofit institutions, industry, and all other U.S. sources. Please indicate under "Comments" the numbers supported by industrial and nonprofit sources.

6. Number of **PART-TIME GRADUATE S/E STUDENTS, FALL 1984**

PART-TIME TOTAL	(1)	
Of the part-time total on line (1), how many are WOMEN?	(2)	

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7. RACIAL/ETHNIC BACKGROUND OF GRADUATE S/E STUDENTS, FALL 1984	Of the graduate student totals in items 5 and 6, how many belong to the following racial/ethnic categories?		U.S. CITIZENS ONLY						FOREIGN[1] (G)	TOTAL (sum of (A) thru (G)) (H)
			Black non-Hispanic (A)	Amer. Indian/ Alaskan Native (B)	Asian/ Pacific Islander (C)	Hispanic (D)	White non-Hispanic (E)	Other or unknown (F)		
	FULL TIME, column (H), should equal item 5, line (6), column (J)	(1)								
	PART TIME, column (H), should equal item 6, line (1)	(2)								

Please include all non-U.S. citizens, whether holding temporary or permanent visas, in column (G).

8. Number of S/E POSTDOCTORATES and NON-FACULTY DOCTORAL RESEARCH STAFF, FALL 1984. (Include those affiliated with this department as well as those employed in associated academic research units. Exclude clinical fellows and residents not involved in research.)		POSTDOCTORATES						OTHER NON-FACULTY DOCTORAL RESEARCH STAFF (G)	TOTAL (Sum of (E) and (G)) (H)
		SOURCE OF SUPPORT				TOTAL for all sources (A) thru (D) (E)	Of the total in (E), how many are FOREIGN? (F)		
		Federal			Non-Federal				
		Fellowships (A)	Traineeships (B)	Research grants (C)	(D)				
TOTAL	(1)								
Of the total in each cell of line (1), how many are WOMEN?	(2)								
Of the total in each cell of line (1), how many hold the M.D., D.D.S., or D.V.M. degree?	(3)								

9. OTHER NON-FACULTY S/E DOCTORAL RESEARCH STAFF, Fall 1984		
Number receiving doctorates before fall 1977 (A)	Number receiving doctorates in fall 1977 or later (B)	TOTAL (Should equal item 8, column (G), line (1)) (C)

10. RANK AND TENURE STATUS OF FULL-TIME S/E FACULTY, Fall 1984 (Include ALL full-time S/E faculty, regardless of whether teaching graduate students or undergraduates.)					
Academic rank Check here if department has NO full-time S/E faculty ☐		Tenured (A)	Non-tenured		TOTAL (Sum of [A] thru [C]) (D)
			In tenure track (B)	Not in tenure track (C)	
Professor	(1)				
Associate professor	(2)				
Assistant professor	(3)				
Other ranks	(4)				
Non-ranked	(5)				
Total	(6)				

11. NEW FULL-TIME S/E FACULTY APPOINTMENTS during academic year 1983/84
(DO NOT include re-appointments)

Appointments		Tenure status as of date of appointment		TOTAL (Sum of [A] and [B])
		Tenured (A)	Non-tenured (B)	(C)
Total	(1)			
Of those in line (1) above, how many joined your department from full-time faculty or staff positions in another academic institution? (Do not report transfers within your institution).	(2)			

12. FULL-TIME S/E FACULTY DEPARTING during academic year 1983/84

Reason for leaving		Tenure status of full-time S/E faculty leaving		TOTAL (Sum of [A] and [B])
		Tenured (A)	Non-tenured (B)	(C)
Retirement, illness, or death	(1)			
Voluntary resignation for another academic position	(2)			
Voluntary resignation for a position in business or industry	(3)			
Voluntary resignation for other reasons	(4)			
Failure to receive tenure	(5)			
Involuntary resignation for other reasons	(6)			
Total	(7)			

Approximately how many personhours were required to complete this form?_____

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Check List

- ☐ 1. Do all entries reflect headcounts and **NOT** FTE's?
- ☐ 2. Do the data in items 5 and 7 through 12 add to totals?
- ☐ 3. Have you **included** all self-supported full-time graduate S/E students in item 5, column (I)? Note that self-supported students should also be included in the total, column (J).
- ☐ 4. Have you **excluded** M.D., D.D.S., and D.V.M. candidates, interns, and residents (except those enrolled in joint programs with the Ph.D.) from items 5, 6, and 7?
- ☐ 5. Does item 5, line (6), column (J) equal item 7, line (1), column (H)?
- ☐ 6. Does item 6, line (1) equal item 7, line (2), column (H)?
- ☐ 7. Does item 9, column (C) equal item 8, column (G), line (1)?
- ☐ 8. In items 10 through 12, have you INCLUDED both graduate and undergraduate full-time faculty?

Comments (including explanations of any variances from prior year's data) and further detail on students receiving funding from other sources:

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NOTE: This information is solicited under the authority of the National Science Foundation Act of 1950, as amended. All information you provide will be used for statistical purposes only. Your response is entirely voluntary and your failure to provide some or all of the information will in no way adversely affect your institution.

Appendix J

REFERENCES

This section lists recent publications resulting from the Academic Science and Engineering Statistics Surveys. The technical notes, general notes, and questionnaire facsimiles in these publications are an essential reference for anyone planning to utilize the data tapes. Most of these documents are obtainable at no charge from the Editorial and Inquiries Unit, National Science Foundation, Room L-611, 1800 G Street, N.W., Washington, DC 20550.

The results of SRS studies have historically been made available through the publication of detailed statistical tables and various analytical reports, such as Science Resources Studies Highlights and Reviews of Data on Science Resources. The future publication policy for the Division is currently under review. Although past reports and Highlights are still available for distribution, detailed statistical tables previously published in paper-copy form henceforth will be available on magnetic tape and also on a 5-1/4" diskette suitable for use on an IBM-compatible personal computer. Persons interested in gaining access to the data should contact the Editorial and Inquiries Unit, Division of Science Resources Studies, tel: (202) 634-4622.

* * * *

SURVEYS AND RELATED PUBLICATIONS

J.1 SURVEY OF SCIENTIFIC AND ENGINEERING EXPENDITURES AT UNIVERSITIES AND COLLEGES

Statistical Tables

Academic Science/Engineering: (Detailed Statistical Tables) R&D Funds, Fiscal Year 1983. (NSF 85-308)

Academic Science/Engineering: (Detailed Statistical Tables) R&D Funds, Fiscal Year 1982. (NSF 84-308)

Academic Science/Engineering: (Detailed Statistical Tables) R&D Funds, Fiscal Year 1981. (NSF 83-308)

Highlights

"8% Real Growth Projected Annually for Academic R&D Expenditures Through 1986", Science Resources Studies Highlights. (NSF 86-302)

"Academic R&D Funding Increased 7% in FY 1983: Higher Gains Expected Through 1985," Science Resources Studies Highlights. (NSF 85-306)

"Non-Federal Funding for Academic R&D Activities Increased at Faster Pace than Federal Funding in Fiscal Year 1982," Science Resources Studies Highlights. (NSF 84-307)

"Real Growth of Academic R&D Expenditures Slowed to 2% in FY 1981", Science Resources Studies Highlights. (NSF 83-304)

J.2 SURVEY OF SCIENTIFIC AND ENGINEERING PERSONNEL EMPLOYED AT UNIVERSITIES AND COLLEGES

Statistical Tables

Academic Science/Engineering: Scientists and Engineers, January 1984. (Detailed Statistical Tables) (NSF 85-316)

Academic Science/Engineering: Scientists and Engineers, January 1983. (Detailed Statistical Tables) (NSF 84-309)

Academic Science/Engineering: Scientists and Engineers, January 1982. (Detailed Statistical Tables) (NSF 83-311)

Highlights

"All Fields Share in 3% Growth in Academic S/E Employment," Science Resources Studies Highlights. (NSF 85-317)

"Science and Engineering Employment in Academia Grew 3% in 1983," Science Resources Studies Highlights. (NSF 84-317)

"Academic Employment of Scientists and Engineers Continued to Grow in 1982, but Slower than in Other Economic Sectors," Science Resources Studies Highlights. (NSF 83-317)

J.3 SURVEY OF GRADUATE SCIENCE AND ENGINEERING STUDENTS AND POSTDOCTORATES

Statistical Tables

Academic Science/Engineering: Graduate Enrollment and Support, Fall 1983. (Detailed Statistical Tables) (NSF 85-300)

Academic Science/Engineering: Graduate Enrollment and Support, Fall 1982. (Detailed Statistical Tables) (NSF 84-306)

Academic Science/Engineering: Graduate Enrollment and Support, Fall 1981. (Detailed Statistical Tables) (NSF 83-305)

Highlights

"Graduate S/E Enrollment Shows Smallest Increase Since 1977," Science Resources Studies Highlights. (NSF 86-303)

"Graduate S/E Enrollment Rose 4% in 1983, with Major Gains in Computer Science and Engineering," Science Resources Studies Highlights. (NSF 85-313)

"Graduate Science/Engineering Enrollment Grew by 2% Between Fall 1981 and 1982, with Computer Sciences, Up 20%, Leading Growth," Science Resources Studies Highlights. (NSF 84-313)

"Graduate Science/Engineering Enrollment Rose 2% in 1981, Mostly in High Tech Fields," Science Resources Studies Highlights. (NSF 83-310)

J.4 FEDERAL SUPPORT TO UNIVERSITIES, COLLEGES, AND SELECTED NONPROFIT INSTITUTIONS

Statistical Tables

Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1983. Final Report. (NSF 85-321)

Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1982. Final Report. (NSF 84-315)

Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1981. Final Report. (NSF 83-315)

Highlights

"Federal Academic R&D Funds Continue Strong Growth Through 1985," Science Resources Studies Highlights. (NSF 85-314)

"Federal Academic Obligations Increased by 13% in 1982, 5% in Real Dollars," Science Resources Studies Highlights. (NSF 84-305)

"Federal Science/Engineering (S/E) Support to Universities and Colleges Rose by 6% in FY 1981; Non-S/E Support Down 25%," Science Resources Studies Highlights. (NSF 83-306)

Selected Early Release tabulations can be ordered by respondents and interested users and analysts of academic science and engineering data. If you would like to have your name added to these mailing lists, please complete the form at the end of this Data User Guide and return it to the National Science Foundation.

Appendix K

SAMPLE TAPE DIRECTORY AND TAPE DUMP

GRADUATE STUDENT SURVEY DIRECTORY

(N=No, Y=Yes)

DIRECTORY LISTING FOR GSS ARCHIVAL TAPE CREATED ON 9/11/81

FICE	INSTITUTION NAME	73	74	75	76	77	78	79	80
000186	DREW POST-GRADUATE MEDICAL SCHOOL	N	N	N	N	N	Y	Y	Y
001002	ALABAMA A & M UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001004	UNIVERSITY OF MONTEVALLO	N	N	Y	Y	Y	N	Y	Y
001006	ALABAMA STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001016	UNIVERSITY OF NORTH ALABAMA	N	N	N	N	N	N	Y	Y
001020	JACKSONVILLE STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001036	SAMFORD UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001047	TROY STATE UNIVERSITY	N	N	N	N	N	N	Y	Y
001049	TROY STATE UNIVERSITY AT MONTGOMERY	N	N	N	N	N	N	Y	Y
001050	TUSKEGEE INSTITUTE	N	N	Y	Y	Y	N	Y	Y
001081	THE UNIVERSITY OF ALABAMA	Y	Y	Y	Y	Y	Y	Y	Y
001082	THE UNIVERSITY OF ALABAMA IN BIRMINGHAM	Y	Y	Y	Y	Y	Y	Y	Y
001085	THE UNIVERSITY OF ALABAMA IN HUNTSVILLE	N	Y	Y	Y	Y	Y	Y	Y
001087	UNIVERSITY OF SOUTH ALABAMA	N	Y	Y	Y	Y	Y	Y	Y
001081	ARIZONA STATE UNIVERSITY	Y	Y	Y	Y	Y	Y	Y	Y
001082	NORTHERN ARIZONA UNIVERSITY	N	Y	Y	Y	Y	Y	Y	Y
001083	UNIVERSITY OF ARIZONA	Y	Y	Y	Y	Y	Y	Y	Y
001092	UNIVERSITY OF CENTRAL ARKANSAS	N	N	Y	Y	Y	N	Y	Y
001098	HENDERSON STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001101	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	N	N	Y	Y	Y	N	Y	Y
001108	UNIVERSITY OF ARKANSAS	Y	Y	Y	Y	Y	Y	Y	Y
001109	UNIVERSITY OF ARKANSAS - MED SCI CAMPUS	Y	Y	Y	Y	Y	Y	Y	Y
001117	AZUSA PACIFIC COLLEGE	N	N	Y	Y	Y	N	Y	Y
001122	BIOLA COLLEGE	N	N	Y	Y	Y	Y	Y	Y
001131	CALIFORNIA INSTITUTE OF TECHNOLOGY	Y	Y	Y	Y	Y	Y	Y	Y
001133	CALIFORNIA LUTHERAN COLLEGE	N	N	Y	Y	Y	N	Y	Y
001137	CALIF STATE UNIV AT FULLERTON	N	N	Y	Y	Y	N	Y	Y
001138	CALIF STATE UNIV AT HAYWARD	N	N	Y	Y	Y	N	Y	Y
001139	CALIF STATE UNIV AT LONG BEACH	N	N	Y	Y	Y	N	Y	Y
001140	CALIF STATE UNIV AT LOS ANGELES	N	N	Y	Y	Y	N	Y	Y
001141	CALIF STATE UNIV AT DOMINGUEZ HILLS	N	N	Y	Y	Y	N	Y	Y
001142	CALIF STATE COLLEGE AT SAN BERNARDINO	N	N	Y	Y	Y	N	Y	Y
001143	CALIF POLY STATE UNIV AT SAN LUIS OBISPO	N	N	Y	Y	Y	N	Y	Y
001144	CALIF STATE POLYTECHNIC UNIV AT POMONA	N	N	Y	Y	Y	N	Y	Y
001146	CALIF STATE UNIVERSITY AT CHICO	N	N	Y	Y	Y	N	Y	Y
001147	CALIF STATE UNIVERSITY AT FRESNO	N	N	Y	Y	Y	N	Y	Y
001149	HUMBOLDT STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001150	CALIF STATE UNIVERSITY AT SACRAMENTO	N	N	Y	Y	Y	N	Y	Y
001151	SAN DIEGO STATE UNIVERSITY	Y	Y	Y	Y	Y	Y	Y	Y
001153	CALIF STATE UNIVERSITY AT NORTHRIDGE	N	N	Y	Y	Y	N	Y	Y
001154	SAN FRANCISCO STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001155	SAN JOSE STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001156	SONOMA STATE UNIVERSITY	N	N	Y	Y	Y	N	Y	Y
001157	CALIF STATE COLLEGE OF STANISLAUS	N	N	Y	Y	Y	N	Y	Y
001158	US INTERNATIONAL UNIVERSITY	Y	Y	Y	Y	Y	Y	Y	Y
001164	CHAPMAN COLLEGE	N	N	Y	Y	Y	N	Y	Y
001169	CLAREMONT UNIV CENTER & GRADUATE SCHOOL	Y	Y	Y	Y	Y	Y	Y	Y
001171	HARVEY MUDD COLLEGE	N	N	Y	Y	Y	N	Y	Y
001183	HOLY NAMES COLLEGE	N	N	Y	Y	Y	N	Y	Y

TAPE DUMP

(I=Imputed, E=Estimated)

FIRST 50 RECORDS, TAPE NSF339

00014574193701071212U OF TEX SAN ANT DENT SCHSAN ANTONIO TEX 78212				
00014574 21				
00014574321 20	2I	2I	0I	0I
00014574321 21	1I	1I	0I	0I
00014574321 22	1I	1I	0I	0I
00014574321 30	1I	0I	1I	0I
00014574321 31	1I	0I	1I	0I
00014574321 40	2I	2I	0I	0I
00014574321 41	2I	2I	0I	0I
00014574321 50	1I	1I	0I	0I
00014574321 52	1I	1I	0I	0I
00014574321 70	3I	3I	0I	0I
00014574321 71	1I	1I	0I	0I
00014574321 73	1I	1I	0I	0I
00014574321 74	1I	1I	0I	0I
00014574321 00	9E	8I	1I	0I
00014574321 90	9E	8I	1I	0I
00014574322 10	6I	5I	1I	0I
00014574322 40	3I	3I	0I	0I
00014574322 00	9E	8I	1I	0I
00014574323 40	1I	1I	0I	0I
00014574323 41	1I	1I	0I	0I
00014574323 50	1I	1I	0I	0I
00014574323 52	1I	1I	0I	0I
00014574323 60	2I	1I	1I	0I
00014574323 00	4E	3I	1I	0I
00014574323 90	2I	1I	1I	0I
00014574324 10	1I	1I	0I	0I
00014574324 40	2I	1I	1I	0I
00014574324 50	1I	1I	0I	0I
00014574324 00	4E	3I	1I	0I
00014574326 20	2I	2I	0I	
00014574326 21	1I	1I	0I	
00014574326 22	1I	1I	0I	
00014574326 30	1I	1I	0I	
00014574326 31	1I	1I	0I	
00014574326 40	2I	2I	0I	
00014574326 41	2I	2I	0I	
00014574326 50	1I	1I	0I	
00014574326 52	1I	1I	0I	
00014574326 70	3I	3I	0I	
00014574326 71	1I	1I	0I	
00014574326 73	1I	1I	0I	
00014574326 74	1I	1I	0I	
00014574326 00	9E	9I	0I	
00014574328 00	0	0	0	
00014574325 20	1I	1I	0I	
00014574325 30	1I	1I	0I	
00014574325 40	1I	1I	0I	
00014574325 50	2I	1I	1I	

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